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# QUARTERLY BULLETIN OF THE SOUTH AFRICAN LIBRARY

#### KWARTAALBLAD VAN DIE SUID-AFRIKAANSE BIBLIOTEEK

Vol. 12, No. 2 DECEMBER: 1957: DESEMBER Deel 12, No. 2

#### SIR JOHN HERSCHEL AT THE CAPE

#### INTRODUCTION

"On January 15, 1834, there arrived at the Cape a young English scientist and philosopher who for sheer drive, intellectual capacity and versatility has had few equals in the long history of callers at Table Bay. Within six weeks of his arrival, it is recorded, Sir John Herschel 'had landed his unwieldy luggage, bought a house six miles out of town, settled with his wife and the three tiny children he already possessed, established his observatory and telescope, and was ready to turn it on to the South African sky', intent on completing in the Southern Hemisphere the Star Catalogue initiated in the Northern Hemisphere by his famous father.

"During the four years of his stay at the Cape, Herschel accomplished as much as most men in half a life-time. Night after night was spent in sweeping the sky; he worked single-handed, and during the day innumerable computations had to be executed, records kept, correspondence maintained with fellow-astronomers all over the world. Yet this remarkably vital person found time not only for these engrossing matters, but also, among many other activities, for sketching almost daily, with the aid of his camera lucida, the attractive surroundings of his home at Feldhausen, the panorama of the unspoiled Cape, and even the wild flowers gathered while botanising on Table Mountain.

"These sketches have long been known to exist in the possession of the Herschel family in England. Through the good offices of the Rev. C. T. Wood, and the public-spirited generosity of the present Lady Herschel, these Cape sketches have now been presented by the Herschel family to the South African Library for preservation, study and display. They include 18 sketches of wild flowers drawn by Herschel, most of them painted by his wife; and more than a hundred pencil sketches of landscapes in the Peninsula and in the neighbourhood of Paarl and Stellenbosch, constituting a topographical record of outstanding interest. A number of the drawings are of Feldhausen, the Herschel estate in what is now Claremont (long since cut up into suburban building plots); and these

alone give a striking impression of the scene from the eastern windows of the manor-house, with an uninterrupted vista across the sandy Flats to the Stellenbosch Mountains thirty miles away. In addition there are three groups of sketches designed for display as panoramic views—taken from the Paarl Rock, Table Mountain and the beacon on the "Hen and Chickens" at Wynberg, each giving a wide sweep of countryside, and that from Table Mountain showing the town itself and the shipping in the Bay, many feet below."

These words were written in December 1952<sup>1</sup>, shortly after the Herschel drawings had arrived in Cape Town. It was then hoped firstly that these drawings, when mounted and arranged, would be placed on public exhibition in the Library, and secondly that the Library would publish a special brochure "containing reproductions of a number of the sketches, with a series of assessments of Herschel's work at the Cape by authorities on the various branches of knowledge in which he excelled".

For a number of reasons neither of these hopes could be immediately fulfilled; but fortunately both projects are now materialising, five years later. From 2-7 December 1957, an exhibition of the sketches, together with a series of fine photographs of Cape Dutch gables from the Jardine Collection, is being held in the Old Supreme Court building, Adderley Street, Cape Town, under the auspices of the Friends of the South African Library and the Union Department of Education, Arts and Science (Division of Adult Education). It will be opened by Mr. Deane Anderson on Monday, 2 December, and the Cape public will for the first time have an opportunity of seeing this attractive and valuable topographical record.

At the same time this special number of the Quarterly Bulletin has been achieved, through the welcome co-operation of the following contributors: Professor R. H. Stoy, H.M. Astronomer at the Cape; Dr. David S. Evans, his Chief Assistant; and Professor E. G. Pells, of the Department of Education, University of Cape Town. Mr. A. M. Lewin Robinson, Deputy Chief Librarian, S.A. Library, has contributed an article on the Cape during Herschel's time, and has also provided a detailed list of the drawings, a note on the camera lucida, and a bibliography of Herschel's writings relating to his visit to the Cape.

We are also greatly indebted to Dr. F. W. F. Purcell, for planning and arranging the Exhibition; to Mr. F. J. Wagener, Organiser of Adult Education, Cape Western Province, for his ready co-operation and assistance; and most of all, perhaps, to Mr. Donald MacIntyre, who not only contributed the blocks for the illustrations, but has been the guiding spirit behind this project from the start.

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<sup>&</sup>lt;sup>1</sup> Quarterly Bulletin of the S.A. Library, 7(2), 37-8, December 1952.

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Sir John Herschel is remembered at the Cape today in the name of a well-known girls' school and two or three streets in Claremont, and through the Obelisk that bears his name. It is hoped that the exhibition and brochure will serve to remind South Africans, who are now looking more than ever to the skies<sup>2</sup>, of the lasting contribution made to this country and its development by this many-sided visitor of a century ago

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D. H. VARLEY

#### SIR JOHN HERSCHEL (1792-1871)

John Frederick William Herschel, Bart., K.H. was born at Slough, near Windsor, on the 7th March, 1792 and died at Collingwood, Kent on the 11th May, 1871, in his eightieth year. He was the only child of Sir Frederick William Herschel and, like his father, was one of the greatest astronomers of all ages.

William Herschel was born in 1738 at Hanover where his father, Isaac Herschel, was a professional musician. The family was large and money scarce, but the home seems to have been both happy and cultured. Describing it, Caroline Herschel, who devoted her life to helping her brother William, says:

"My brothers were often introduced as solo performers and assistants in the orchestra at the Court, and I remember that I was frequently prevented from going to sleep by the lively criticisms on music on coming from a concert. Often I would keep myself awake that I might listen to their animating remarks, for it made me so happy to see them so happy. But generally their conversation would branch out on philosophical subjects, when my brother William and my father often argued with such warmth that my mother's interference became necessary when the names—Euler, Leibnitz and Newton—sounded rather too loud for the repose of her little ones, who had to be at school by seven in the morning."

It was from this family circle that William was forcibly separated at the age of 18 by the outbreak of the Seven Years' War in 1756. He was in the regimental band of the Hanoverian Guards but deserted after the disastrous battle of Hastenbeck and made his way to England, where he was able to earn a living as a performer and teacher of music. He prospered and in 1766 became organist at the Octagon Chapel in Bath, then the centre of the

<sup>&</sup>lt;sup>2</sup> The artificial satellites 'Sputnik I and II' were successfully launched by Russian scientists in 1957, as part of the International Geophysical Year; the rocket-case of the former was clearly observed by many South Africans during the month of November, 1957.

fashionable world and frequented by many of the most influential people in England. This was the culmination of his career as a musician, a career in which he had won success, prosperity and a considerable reputation as a performer, composer and teacher of music.

From his earliest youth, William Herschel had been endowed with an insatiable thirst for knowledge. From the study of the theory of music, he had been led to that of mathematics and thence to optics and astronomy. He was already about 35, when he began to observe the heavens. At first he used small refractors which he bought, but finding them unsatisfactory he set about making a reflecting telescope for himself. This was the first of a long series of instruments made by Herschel, a series that culminated in a gigantic telescope having a mirror four feet in diameter and a length of forty feet. Unlike many modern amateur telescope makers, for whom building a telescope is an end in itself, Herschel built his telescopes for use. He observed the Sun, Moon, Planets and Comets as many astronomers had done before him, but unlike them he pushed his researches beyond the limits of the solar system. He made a planned systematic exploration of the sky, searching out and measuring double stars, cataloguing and describing the nebulae and star clusters, and made star counts from which to gauge the extent of the visible universe. He well merited the inscription on the mural tablet in the church where he is buried, "Coelorum perrupit claustra" . . . "He burst through the barriers of the heavens."

It was in the course of one of these routine examinations of the sky that Herschel discovered Uranus in 1781. Though merely incidental to his main astronomical work, this discovery brought him fame and changed him from a professional musician into a professional astronomer. In 1782, King George III invited him to Windsor, pardoned him for deserting from the Hanoverian army twenty-five years before and offered him a position as the King's private astronomer, a position not to be confused with that of Astronomer Royal, which was then held by Nevil Maskelyne. In consequence, Herschel moved from Bath, first to Datchet and soon after to Slough. All this time, Herschel had been a bachelor assisted and looked after by his sister Caroline. In 1788 he married the widow of Mr. John Pitt, a wealthy London merchant, and their only child was born four years later, when William Herschel was already 54 years old.

John Herschel was thus brought up in a quiet cultivated home where, from the first, he was both encouraged and enabled to devote himself almost exclusively to intellectual pursuits. He was educated first at Eton and then at the house of a private tutor. He went to St. John's College, Cambridge at the early age of 17 and was Senior Wrangler in 1812. This does not mean, as it all too frequently means now, that he was accomplished as a mathematician and as nothing else. He had a wide knowledge of the classics, of

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After the deta in Sout geneous nomers' of Nebu standarthe sou He died finished Society star obs Latin and Greek, of music and of art. For some years he seems to have devoted himself to mathematics and with two fellow students, Peacock and Babbage, did much to introduce the continental methods of analysis to a Cambridge that was still resting supinely under the shadow of Newton. He contributed a number of papers on new applications of mathematical analysis to the Royal Society of which august body he was made a Fellow when still only 21. Following the example of several eminent Cambridge mathematicians of that period, he went to London to study law, but coming into contact with Dr. Wollaston and a number of other eminent London scientists, he forsook the law to return to the pursuit of science and, in particular, of optics and astronomy. In 1820, assisted by his father, he completed a mirror of 18 inches diameter and 20 feet focal length which became the heart of the telescope with which much of his later observing was done.

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The first practical astronomy that John Herschel undertook was a systematic series of measures of double stars discovered by his father. This work was done between 1821 and 1823 in co-operation with Sir James South, a medical man possessed of an ardent devotion to science, a considerable private fortune and an excellent collection of first class astronomical instruments.

When his father died in 1822, John Herschel inherited ample means and all the telescopes and apparatus his father had used. These material aids, together with a sense of filial obligation, turned him more and more to astronomy. Shortly afterwards he began the repetition and completion of the systematic survey of the northern heavens that his father had begun. It was when this task was complete that Herschel conceived the idea of taking his telescope to a station in the southern hemisphere and extending the survey to cover the whole of the heavens. He set out for the Cape in November 1833 and returned to England in 1838 having brilliantly accomplished the vast task he had set himself in the comparatively short space of four years.

After his return to England, Herschel's main astronomical work was first the detailed reduction of the tremendous number of observations he had made in South Africa, and secondly the co-ordination into comprehensive homogeneous catalogues of the results of his father's, his own and other astronomers' surveys of the northern and southern heavens. His General Catalogue of Nebulae and Clusters, only slightly revised by Dr. Dreyer, still remains the standard catalogue for these objects and for many them, especially those in the southern hemisphere, his descriptions are still the only ones available. He died before the compilation of the similar catalogue for double stars was finished, but this was completed and published by the Royal Astronomical Society to whom it was bequeathed. It remains a useful source of double star observations made before 1866.

But Herschel had other interests than astronomy. One of these was

photography. He was a highly accomplished chemist and in 1819 had discovered the solvent action of sodium hyposulphite on the otherwise insoluble silver salts. In 1839, quite independently of Fox Talbot, he discovered the method of taking and multiplying photographic pictures and exhibited more than twenty of them to the Royal Society. He was the first person to introduce the terms *positive* and *negative* images into photography and to deposit upon glass a sensitized film for the reception of the picture.

In his later years, Herschel lived a quiet retired life at his beautiful home at Collingwood in Kent. He had married Margaret Brodie Stewart in 1829 and they had a large family. He was the recipient of many honours from learned societies all over the world and was created a knight by King William IV in 1831, and a baronet by Queen Victoria at her Coronation in 1838. He was for a time the Master of the Mint, but public office did not appeal to him and he firmly declined the pressing invitations of his friends to become a candidate for the Presidency of the Royal Society or for representing the University of Cambridge in Parliament. He preferred the quiet life of a scholar. His hobby during his later years was the translation of the Iliad into verse, as earlier he had translated Schiller's Walk. When he died he was given a national funeral and was buried in Westminster Abbey close to Newton.

Of him as a man, Dr. Pritchard wrote

"In private life Sir John Herschel was a firm and most active friend; he had no jealousies; he avoided all scientific feuds; he gladly accorded a helping hand to those who consulted him in scientific difficulties; he never discouraged, and still less disparaged men younger than or inferior to himself; he was pleased when his own work was appreciated, but that was never an object of his solicitude: it was said of him by a discriminating critic, and without extravagance, that 'his was a life full of the serenity of the sage and the docile innocence of a child'. Happy the pursuits that can lead to such results!"

R. H. STOY

## THE ASTRONOMICAL WORK OF SIR JOHN HERSCHEL AT THE CAPE

Introduction

An appreciation of the work of Sir John Herschel at the Cape during his stay of four years from 1834 to 1838 requires some knowledge of the personalities and scientific achievements both of Herschel himself and of Thomas Maclear, who held the office of His Majesty's Astronomer at the Cape during Herschel's visit. Herschel left a very detailed and voluminous record of his

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purely scientific work in a massive tome entitled "Results of Astronomical Observations made during the Years 1834, 5, 6, 7, 8 at the Cape of Good Hope: being the completion of a telescopic survey of the whole surface of the visible heavens, commenced in 1825." This volume did not appear until 1847 and is largely a formal account of the author's researches. The man himself hardly appears through the rolling Victorian prose, and there is little sense of the day-to-day effort, only of work polished and completed a decade before.

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The record of Herschel as he was known to his contemporaries and colleagues must be sought elsewhere. Fortunately one of these colleagues, and a close friend, was Thomas Maclear. Herschel was a voluminous correspondent, and Maclear kept almost every piece of paper which he ever received. The Maclear papers in the South African Archives occupy more than one hundred bulky foolscap files, and included among them are several files of letters from Herschel to Maclear, letters from Lady Herschel to Mrs. Maclear, and the personal diaries of Mrs. Maclear. These documents enable the persistent reader of their almost illegible scrawls and flourishes to round out the picture of Herschel beyond the limits of published biographical material.

At the age of 42, when he came to South Africa, Herschel was widely celebrated, loaded with honours, happily married and the father of four children. His purpose in coming was to make observations in the southern hemisphere complementary to those made by his father and himself in the north. It would at first sight seem no better than small-minded to make any criticism of a man such as Herschel who had already accomplished what in another man might have been called a prodigious life work. Nevertheless there was an air of dilettantism about Herschel. His mind ranged over a vast number of subjects: he could generate the wildest enthusiasm, which often expressed itself in scientific subjects in almost interminable theoretical writings, but when it came to physical hard work his enthusiasm would often flag. After he left South Africa he never put eye to telescope again, but occupied himself with official committees and advisory duties. Professor Pritchard in his biographical notice in the Encyclopaedia Britannica wrote "Herschel had become an astronomer from a sense of duty, just as his father had become one by fascination and fixed resolve; hence it was by filial loyalty to his father's memory that he was now impelled to undertake the completion of that work which at Slough had been so grandly commenced. William Herschel had explored the northern heavens; John Herschel determined to explore the heavens of the south, as well as re-explore the north."

To achieve this object, he and his family set sail from England late in 1833 aboard the East Indiaman, the "Mountstuart Elphinstone". After a voyage of two months there came ashore, Herschel himself, his wife, the

four children, Caroline, Emilia Mary, William James, and Isabella. Then there was the mechanic, John Stone, who had in his charge the 20-foot reflector of 18 inches aperture (with classical pedantry the mirrors provided for it were often referred to as "sesquipedalian") and an equatorially mounted refractor of 5 inches diameter and 7 feet focus.

#### Medico into Astronomer

Thomas Maclear, who was to be Herschel's chief collaborator in South Africa was a man of entirely different stamp and origins. He was born in 1794 in Ireland, was first intended for the Church, but rebelled, and from the age of 15 received a medical training. After completing his studies he became house surgeon at the Infirmary at Bedford, and lived and practised in this neighbourhood until he came to Africa. While at Bedford he became acquainted with the Smyth family and began to take an interest in astronomy. The head of the family was Captain, later Admiral, Smyth, an amiable eccentric who was keenly interested in astronomy, to such an extent in fact, that he named his second son, Charles Piazzi Smyth, after the famous Italian astronomer Piazzi, with whom he was acquainted as the result of naval service in Neapolitan waters. For several years Maclear and Smyth collaborated in their astronomical work, and exchanged ideas. Smyth who was in a position of some influence in public affairs became an officer of the newly founded (Royal) Astronomical Society. Other prominent members were Sir John Herschel and a certain Dr. Lee, a lawyer, who was the Treasurer. So taken up with astronomy was Maclear, that one can only wonder when he had time for his practice, but that he must have found time there can be no doubt, for he was personally very popular and when he left for Africa his fellow townsmen of Biggleswade, where he then lived, presented him with a piece of plate.

Maclear's journey to the Cape was vastly different from that of Herschel. He too had a large retinue—his wife, five children, two servants, and a governess. Maclear, for lack of funds, had perforce exercised economy. They sailed on a merchant ship, the Tam O' Shanter on October 10th 1833, and after a miserable voyage, during which they were all hideously seasick, and one child died, they arrived in Table Bay on January 5th 1834, just ten days before the Herschels. One of the servants, who was the grandson of one of the housekeepers of Dr. Lee (he had several and married another of them) was Thomas Bowler, the well-known South African artist.

#### African collaboration

The stage is now set for the four years of scientific collaboration between Herschel and Maclear, and the opportunity of contrasting the two principals may be taken. Contrasting they were: on the one hand, assured fame,

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urbanity, riches and assurance, knowledge and an erratic enthusiasm. On the other, relative obscurity, dourness, a plodding determination, obstacles to be overcome, and financial stringency. By the greatest of good fortune, the two men liked each other, and with their complementary qualities and diverse characters formed a strong team.

Immediately on their arrival the Herschel party stayed at a house called "Weltevreden" owned by one Borcherds, a residence chiefly remarkable for the fact that in its drawing room a snake wound itself round Lady Herschel's leg. In the meanwhile Herschel had secured the old Cape Dutch farmhouse "Feldhausen" which still exists in Claremont, although with much reduced grounds. Herschel purchased the property in 1835 from its owner, one V. A. Schomberg, and confusion is sometimes caused by the fact that, at a later date, Schomberg was permitted to build himself a house on a corner of the property, and that this house was called "Herschel". Herschel quickly had his instruments erected: the 20 foot reflector was ready by February 22nd, and stood on the spot now marked by the Herschel obelisk, and the equatorial was in commission by May 1st. A small cottage in the grounds became a workshop and polishing house for mirrors, and served also as a chemical laboratory for experiments, including some on the colours of flowers. Chemistry did occupy quite a little of Herschel's spare time, for, in his letters we read of an occasion when he had worked out a method for making fresh butter from salt, and again, he complains of the quality of the saltpetre and pearlash (both bought from the grocer's) with which he was supplied. A lively interlude took place when he, and Captain Wauchope, a friendly naval officer, "had a touch at the huge oak stump in our cross avenue . . . with an ounce vial 2/3 full of a mixture of 4 parts gunpowder & 1 fulminating mercury. It was neatly bisected with an immense bounce & the pieces flew to a good distance". On another occasion he analysed a specimen of iron from the interior. "I find nickel in Capt. Alexander's specimen of native iron from the interior—it therefore assumes a great importance from the remarkable circumstances of its dissemination over the surface of a large area—as if a great meteorite of a highly ferriferous nature had burst there—or a great mass of meteoritic iron fused in caelo & dispersed in a shower—or lastly as if the meteoritic origin of the alloy had been somewhat too hastily assumed."

#### Exploration of the sky

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The work which Herschel had come to do was mainly astronomical. His normal mode of observation was the technique which he called "sweeping". In this method Herschel divided the sky into zones of declination 3 degrees deep and systematically noted down all the nebulae, clusters and double stars which he observed. In many cases in sweeps subsequent to the

initial ones when the discovery of any particular object was made, he would make micrometer measures so as to make the descriptions more accurate In order to fix the positions of these objects with precision Herschel made use of a considerable number of zero stars of known positions. These included 670 stars the positions of which were determined by means of the transit instruments at the Royal Observatory. This was made necessary by the fact that Herschel had intended to rely on the positions of stars as given in the Brisbane catalogue of between seven and eight thousand stars, of which he had obtained a copy before he left England. In the event, the right ascensions of these stars were found to be so often in error that it was necessary for Maclear to re-observe the stars which were needed. Both Herschel and Maclear spent much time on the errors of the Brisbane catalogue partly in an effort to discover some systematic source of error which might be put right by the application of a systematic correction. This hope proved vain in spite of the devotion of several long letters to its discussion. Typical of this part of the correspondence is the following undated extract dealing with a comparison of Maclear's star positions with those of the catalogue. "On the whole I am sorry to observe that this shewing is even more unfavourable to the Brisbane Catal. than the results of any of my previous comparisons—with other authorities-The errors follow no traceable law. Henceforth I feel disposed to dismiss the epithet the Brisbane Catal. as connected with this remarkable astronomical record, & rather to designate it by the names of those concerned in its composition-it is worthy of the age of Ulugh Beg or Tycho Brahe . . . " One of the compilers was Dunlop, of whom Herschel made the acid remark "Dunlop had had the Lalande Medal given him by the French Gov. I wish the awarders would come here and look for some of his nebulae and double stars . . ."

These extracts illustrate the kind of informal collaboration and correspondence which went on between the two men, and also give some very mild examples of the epistolatory style of Herschel with its ampersands, underlinings, abbreviations and exclamation marks. His normal handwriting, which was none too legible explodes into a sort of printer's pie when he becomes, as he frequently does, full of excited enthusiasm.

The private libel on Dunlop had an awkward sequel when Sir George Gibbs, Governor Designate of New South Wales appeared in their midst at the end of 1837. Maclear had to eat humble pie, but managed to pass the buck by attributing any errors in the catalogue to the fact that the reductions had been done in England.

Out of all this there emerged a series of massive and important observational results. The catalogue of nearly 2,200 double stars would alone be an important work, although it has been said that it contains rather a high proportion of optical pairs, that is, pairs of stars which by accident appear close tog some 1,7 tions. T General This cata astronon sky are o when the with larg made. H it is spec comparis his best, niques h Clouds. special c

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close together in the sky and are not physically connected. The catalogue of some 1,700 nebulae and clusters can be admired with practically no qualifications. The nebulae listed there were subsequently included in the New General Catalogue of Dreyer which aimed at including all known nebulae. This catalogue and its two supplements is still the working handbook of the astronomer interested in nebulae, and, so far as the nebulae of the southern sky are concerned, the data presented are still those of Herschel. Only now, when the southern nebulae are at last being systematically photographed with large telescopes is any significant improvement on this catalogue being made. Herschel made drawings of a number of the more striking objects, and it is specially interesting to compare these with modern photographs. The comparison demonstrates at once just how good an observer Herschel was at his best, and just how much of an improvement modern photographic techniques have effected. Herschel paid particular attention to the Magellanic Clouds, the nebulosity near Eta Argus and the Orion nebula and made special catalogues of the objects contained and many drawings.

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In these fields we see Herschel as an observer well in the forefront of contemporary research. In another astronomical field we see him as a revolutionary innovator. This is the field of stellar photometry, where Herschel must have been among the very first to introduce anything approaching systematic measurement. In classical times the brightnesses of the stars had been graded into a hierarchy of magnitudes consisting of six steps from the orightest stars down to the faintest visible to the naked eye. Herschel's own work was largely responsible for the demonstration that the stars in each magnitude class were fainter than those in the class above by a constant ratio of luminosity and that five steps along the sequence corresponded to a ratio of 100 to 1 in luminosity. Herschel and his father before him had made much use of the idea of a sequence, that is, a succession of stars of decreasing brightness which could be used for comparison, so that any star of unknown brightness could be assigned its proper place in the sequence. Herschel introduced numerical measures into the subject by the use of very simple apparatus. On a moonlit night he would form a very much reduced image of the moon by means of a totally reflecting prism and a short focus lens. This image, when viewed from a distance closely resembled the image of a star, but it appeared brighter or fainter according to the distance of the observer's eye from this reduced (real) image. The observer made a measure by stationing himself in such a way that he could see simultaneously the star whose brightness he wished to determine and the artificial star represented by the lunar image. He then moved the optical system, which was mounted on a slider, to such a distance that the star and the artificial star appeared equally initial ones when the discovery of any particular object was made, he would make micrometer measures so as to make the descriptions more accurate In order to fix the positions of these objects with precision Herschel made use of a considerable number of zero stars of known positions. These included 670 stars the positions of which were determined by means of the transit instruments at the Royal Observatory. This was made necessary by the fact that Herschel had intended to rely on the positions of stars as given in the Brisbane catalogue of between seven and eight thousand stars, of which he had obtained a copy before he left England. In the event, the right ascensions of these stars were found to be so often in error that it was necessary for Maclear to re-observe the stars which were needed. Both Herschel and Maclear spent much time on the errors of the Brisbane catalogue partly in an effort to discover some systematic source of error which might be put right by the application of a systematic correction. This hope proved vain in spite of the devotion of several long letters to its discussion. Typical of this part of the correspondence is the following undated extract dealing with a comparison of Maclear's star positions with those of the catalogue. "On the whole I am sorry to observe that this shewing is even more unfavourable to the Brisbane Catal, than the results of any of my previous comparisons—with other authorities-The errors follow no traceable law. Henceforth I feel disposed to dismiss the epithet the Brisbane Catal. as connected with this remarkable astronomical record, & rather to designate it by the names of those concerned in its composition—it is worthy of the age of Ulugh Beg or Tycho Brahe . . . " One of the compilers was Dunlop, of whom Herschel made the acid remark "Dunlop had had the Lalande Medal given him by the French Gov. I wish the awarders would come here and look for some of his nebulae and double stars . . ."

These extracts illustrate the kind of informal collaboration and correspondence which went on between the two men, and also give some very mild examples of the epistolatory style of Herschel with its ampersands, underlinings, abbreviations and exclamation marks. His normal handwriting, which was none too legible explodes into a sort of printer's pie when he becomes, as he frequently does, full of excited enthusiasm.

The private libel on Dunlop had an awkward sequel when Sir George Gibbs, Governor Designate of New South Wales appeared in their midst at the end of 1837. Maclear had to eat humble pie, but managed to pass the buck by attributing any errors in the catalogue to the fact that the reductions had been done in England.

Out of all this there emerged a series of massive and important observational results. The catalogue of nearly 2,200 double stars would alone be an important work, although it has been said that it contains rather a high proportion of optical pairs, that is, pairs of stars which by accident appear close toge some 1.70 tions. Th General ( This cata astronom sky are co when the with large made. He it is spec compariso his best, a niques ha Clouds, 1 special ca

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close together in the sky and are not physically connected. The catalogue of some 1,700 nebulae and clusters can be admired with practically no qualifications. The nebulae listed there were subsequently included in the New General Catalogue of Dreyer which aimed at including all known nebulae. This catalogue and its two supplements is still the working handbook of the astronomer interested in nebulae, and, so far as the nebulae of the southern sky are concerned, the data presented are still those of Herschel, Only now, when the southern nebulae are at last being systematically photographed with large telescopes is any significant improvement on this catalogue being made. Herschel made drawings of a number of the more striking objects, and it is specially interesting to compare these with modern photographs. The comparison demonstrates at once just how good an observer Herschel was at his best, and just how much of an improvement modern photographic techniques have effected. Herschel paid particular attention to the Magellanic Clouds, the nebulosity near Eta Argus and the Orion nebula and made special catalogues of the objects contained and many drawings.

#### Star magnitudes

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#### Tides and Meteorology

Herschel came to Africa purely as a private investigator. He received no funds, and, after his return refused an offer on the part of the Government to pay the expenses of his trip. This left him a completely free hand to undertake what work he wished, and in two particular fields, where his own interests and the official instructions of Maclear coincided he worked with the latter in very close collaboration indeed. These topics are hardly mentioned in his own account of the observations at the Cape, but they figure largely in the correspondence and reveal the two, and particularly Herschel in a very human light.

Two of these topics were the tides and the weather. It was at this time that the Cambridge mathematician Whewell was attempting the formulation of a general theory of the tides, and it was already well known that tidal phenomena were more complicated than the simple march of a luni-solar wave round and round the earth which would be the case if all the terrestrial surface were covered with an ocean of uniform depth. Tidal observations were warmly approved officially and one of Maclear's official instructions read "It will be desirable to determine accurately the height of some principal fixed point in the observatory above the mean level of the sea, and also of some remarkable and unalterable natural station in its vicinity. For this purpose as well as for the lunar theory, it will be necessary to deduce the mean level of the sea from an extensive and regular series of observations of the rise and fall of the tide in Table Bay, or at Robben Island, to which object the Governor will no doubt regularly contribute his assistance". As it turned out there was a considerable doubt about this, and the two scientists, especially Herschel, provided quite a proportion of the necessary funds themselves. They commenced in 1834 by getting tide gauges erected in Simon's Bay and in Table Bay. Herschel undertook some of the observations himselfalthough Bowler once got into hot water by suggesting that Herschel had gone off and left him to do all the work—and was sometimes in trouble over them as

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Hersch and the p of the ve them as the following letter, fairly characteristic of Herschel's style when excited, will show

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I have made so dreadful a *mess* of the Tide Obsn I took on *Monday* as well of the Meteorological Obsvg, by using Daniel's watch—as defies all my power to decipher—i.e. in respect of time. It is something so compounded of the ludicrous & the melancholy as to be an epitome of the great tragicomedy of human life. In truth I am ashamed to shew it you—yet as a matter of curiosity and philosophical enquiry it may be worth while. I shall therefore ride over to the Observatory between the High and Low water tomorrow and "Make a clean bosom" of the whole affair.

Tomorrow (Friday) the stroke of 8 will find me on the jetty. If you will be up, I think I shall take the Observatory in my way and pick up a time I can depend on. My blunders (if blunders they were—i.e. if the evil one had not his finger in the pye) went to whole hours—half hours and quarters. It is something enormous—incredible—and to me utterly incomprehensible,

Yours in haste,

J. F. W. Herschel

P.S. On second thoughts I will not come via the Observatory. There will be too little time and I shall miss the Observations altogether most likely by so doing."

There is a laconic and revealing pencil note added by Maclear to this letter—Maclear was always laconic just as Herschel was always full of second thoughts and postscripts—"A fog. Missed his way and found himself at Tyger B.(erg)"

The gentlemen were mightily exercised over the tidal observations. There were two gauges, and ideally they should have been under continual watch, but it was hard to arrange this and harder still to keep the watchers, oddly named "tide-waiters" up to their work on cold and rainy nights. Then there was the imminent threat of an automatic tide gauge, which in fact never did arrive during Herschel's time. Herschel was as full of advice and contrivances as the White Knight and even when he was "suffering a good deal of internal annoyance from a cause which I have now ascertained to be a constant one & shall avoid in future—(claret!) and which has kept me for the last 2 or 3 days (since Friday) in a very uncomfortable state" he could find the time and energy to design semi-automatic gadgets for recording the time of midtide and schedules of instructions for the tide-waiters.

Herschel occupied himself a good deal with working up the observations and the preparation of interpolation tables and his work seems to have been of the very greatest importance. Even here he could fire off an occasional

exuberant postscript:— "P.S. Voila quelques resultats moyens midwater at Simon's Bay in the float by a mean of observed high and low . . ." and after this macaronic introduction there follows a short table of figures.

Herschel's lighthearted exuberance may possibly lead us into doing him an injustice for there is usually a basis of serious scientific work underneath the fun and fury.

Meteorology was an important anciliary interest of Maclear's and Herschel was unboundedly enthusiastic and could transmit enthusiasm to others, so that we find quite a number of persons, such as sea captains and passengers on ships who have been induced by him to make series of observations with the barometer. At the Cape he got up a meteorological committee and urged especially that on one day each quarter meteorological observations should be taken throughout the 24 hours. This he did himself and a transcript of one such set of observations still exists. He was interested also in trying to determine the difference in height between his station at Feldhausen and the Royal Observatory. He was at his best analysing sets of barometric data to lay bare various systematic tendencies: in practical matters he was sometimes rather at sea-"I hope the elaborate computations you have made of the Barometer have led to some conclusion of use to your reduction or to a better knowledge of the correctness of the Mural Bar.-for I regret to say mine has contracted some defect which I can by no means account for in virtue of which in merely lifting and carrying it (when set up) a few steps air gets in pan below not in globules but in great volumes—depressing the mercury half an inch at a time & in vain have I pulled the cistern to bits & the cause is to me quite unintelligible . . ." or again "May I beg the favour of you to let my Barometer stand a few days in the Circle room & be read off with the circle barometer when convenient. I have left the index at the reading last taken (at noon today)—having discovered & expelled a great air bubble which to my astonishment has changed the readings by 0.225!!

"The stand is rather ticklish one of the brass hinges at the top being almost broken off. Therefore some caution in setting up & a bit of string tied round it at the top will be needed . . ." In fact, Herschel sent down his barometer to be compared almost as often as he sent his chronometer down to be regulated to correct time. In these small but important ways Maclear was, undoubtedly, of the greatest help to him.

#### Solar radiation

Herschel had a great interest in measuring radiation intensities, as exemplified by his instrument, the astrometer, used for determining stellar magnitudes. He also devised an instrument which he called the Actinometer, now like the astrometer superseded, for measuring the intensity of solar radiation. This consisted of a thermometer tube with a very large bulb which was filled

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with a dark liquid. This was to be placed alternately in the sun and in the shade for a minute at a time, and the dilatation of the liquid measured. Insofar as the instrument would absorb and respond to radiation, especially heat radiation, the idea behind it was sound enough, but Herschel could not have the modern background of precise knowledge of radiation and thermodynamics and his instrument was purely empirical and the several he made had individual idiosyncrasies. He did while in South Africa observe the changes in radiation intensity as measured by the Actinometer during a solar eclipse. It is clear that Herschel was groping towards the realisation of the existence of types of radiation outside the limits of the visible spectrum and this work, together with his use of solar radiation for cooking, which he tried on one or two occasions, are all facets of one set of ideas.

#### Halley's Comet

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During Herschel's stay in South Africa a return of Halley's comet was expected. The track predicted for the comet showed a rapid movement from fairly far north crossing into the southern sky about the 18th October 1835. The comet would be at its perihelion (nearest point to the Sun in space) about November 7 followed by a slow movement in the region of the constellations of Scorpio and Centaurus as it faded away again. Both Herschel and Maclear observed the comet assiduously and Herschel cut down a swathe of trees on his grounds to give himself a better field of view. He was more than a little hampered for observation of the comet near the setting sun by the obstruction of his horizon by Devil's Peak and the corner of the Table Mountain massif. He had proposed to Maclear that they should make a joint publication on the comet, but this never came to pass, and in the end Maclear published an account which was illustrated by drawings made by Charles Piazzi Smyth. The latter was the son of old Admiral Smyth, and when Maclear had had to get rid of Bowler and Meadows, Piazzi Smyth, a boy of sixteen, was appointed as his assistant. In spite of his youth he was well versed in astronomy and was an excellent draughtsman as the drawings of the comet bear witness. He had also inherited some of his father's eccentricity as his later obsession with the Great Pyramid was to show, but that is another story, and during his time at the Cape he showed himself a willing and knowledgeable lad popular both with Maclear and with the Herschels at whose residence he would sometimes be asked "to take his tea and stars". Maclear seems to have detected the comet first in September 1835, though he subsequently seems to have muddled his dates, for on the following letter of Herschel's he made a note "This date must be 1836, a day or two after I detected the comet". Herschel wrote "Stone and James (William James Herschel, D.S.E.) actually saw the comet on Thursday & never told me till this morning. Stone's attention was caught coming out of my study (to bring

out my eyepiece box to prepare for sweeping) by an odd looking star about 3 or 4 m over Table Mountain. He thought it was a comet at once. He vows and declares he saw the tail—he called James but James saw no tail. Now I never told Stone that *Halley's* comet would appear in that direction & as I made him point out the exact place & find it agree pretty well with the N[autical] A[Imanac]. I have little doubt he *did* see it. It disappeared behind the Hill in less than 10 m. I never was more inclined to give a man hard words or even a hard knock . . ."

Herschel in another letter calls attention to a phenomenon which has actually been observed, that is, the appearance of a comet close to the Sun during a total solar eclipse. This was the eclipse of 20 November 1835 when Halley's comet was very close to perihelion. He wrote "By the way, in this eclipse, which is a *total* one in some parts—the COMET will be seen—in or near its perihelion!! Seneca witnessed such a phenomenon in the year A.D. 60—what a pity that the line of total shadow is wasted in the desert of S. Africa and Guinea. But in Madagascar & the Indian Seas it will surely be observed & we shall no doubt hear of it (on your principle of making enquiry) . . ." If they did it does not seem to have been recorded.

#### The Outburst of Eta Carinae

Halley's Comet is a rare but recurrent phenomenon: it was indeed a piece of luck that should have brought two good observers to the southern hemisphere at an apparition so favourable for them. But Herschel also had the luck to observe a unique and non-recurring phenomenon, the nova outburst of Eta Argus (Eta Carinae) at the end of 1837. Eta Argus, whose name has been changed in a subsequent constellation revision, was a fairly bright star involved in a vast complex mass of nebulosity which with the stars contained in it is one of the most striking features of the southern Milky Way. Herschel in fact devotes many pages and more than one drawing in his published volume to a description of this region and a catalogue of the stars and nebulous regions in this part of the sky. In 1837 on December 16 Herschel sent Maclear a note to say that Eta Argus had suddenly become brighter. The sudden brightening of a star is a rare but well known phenomenon usually called a nova outburst. It is in reality a catastrophic explosion of a star and is so-called because, in many cases, the extent of the increase is so great that a previously invisible star becomes visible to the naked eye or in small telescopes, and it thus appears as if a new star had been created. This impression is the reason for the name "nova" which is still used in spite of its incorrect implications. The increase of brightness is so rapid that it is rather rare for observations of a nova to be secured during the increasing phase and rarer still for a nova to have been observed before the outburst. Eta Argus was thus a very exceptional case for it was a well known star before the months, fortnight began to eye. It is the rem

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outburst. Herschel made visual estimates of the brightness of the star for some months, and more especially during the last fortnight of 1837 and the first fortnight of 1838. As is usual with novae, the brightness after maximum began to decrease rapidly and the star is today no longer visible to the naked eye. It is surrounded by a cloud of glowing gas centred on it which may be the remnant of the outburst.

#### Constellation reform

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Herschel's passion for elaborate schemes carried him beyond the bounds of what was most desirable when he applied his mind to the problem of constellation reform. The constellations at that time were not very systematically defined or rationally divided. Most had Latin or Greek names, but many of them were very similar, some constellations were concentrated. others straggled all over the sky: the modern rule whereby the brightest stars in a constellation were denoted by the Greek letters in order of descending brightness was not established firmly. Herschel wrote at length to Maclear on a scheme for constellation reform, much of which was very sensible. His particular bugbear was the attempt to represent animals and beasts, mythological or real, by the configurations of the stars, but, as Maclear remarked, he spoiled his scheme when he proposed to retain the constellation of Orion, but to turn the figure which it is often supposed to represent, upside down. In fact, much of what Herschel hoped to see has now been achieved, with the nodern internationally agreed system in which constellation boundaries rul along parallels of declination or meridians of right ascension like the boundaries of American States.

Two of the subjects which figure very largely in the Herschel-Maclear correspondence are topics in which Herschel was not the prime mover but the supporter of Maclear in the execution of his official instructions.

#### The Mural Circle

The first of these was the mural circle, an instrument intended for the accurate determination of the positions of stars. As the name indicates it was a telescope fixed to a wall or pier in such a way that its movement was limited to rotation in a vertical plane fixed in the north-south direction. Observations of position were made by determining the time at which a given star passed through the field of the telescope, and the inclination of the telescope at that moment. From its earliest installation this instrument had given trouble. Fallows, Henderson, and Airy, the Astronomer Royal, had spent much energy and print on the erratic nature of the results which it gave, but it had never been settled whether the errors were due to a deformation of the circle, or the pivots on which it was mounted, or of the graduations of the scale. At a later date the trouble was traced to a loose axis. Maclear had to

make the wretched thing work, and was, understandably, deeply troubled. Herschel sent letter after letter giving detailed suggestions for methods of determining its errors and for the analysis of the results. These are of considerable technical interest, for it seems that Herschel anticipated many of the methods of instrument testing in use today, but the matter is too involved to be discussed here, and it would require far too much space.

Geodesv and Survey

Maclear had also been instructed to measure a geodetic base line and to conduct a survey in the neighbourhood of Cape Town. This was of considerable scientific importance for in 1751-53 the Abbé de la Caille had carried out a geodetic survey in the Cape with most unexpected results. In such a survey the distance between widely separated stations on the earth is determined by two different methods: in the one, a fairly short base line is accurately measured, and the distance between the stations is determined by triangulation from the ends of this line. In the other, the latitude and longitude of the stations are determined by astronomical means. A comparison of the two results will show how the earth's surface differs from a true sphere. Work in the north had shown that the earth is an oblate spheroid, but to the general surprise la Caille's work had indicated that the southern hemisphere was a prolate spheriod. This conclusion is now known to be erroneous and to result from a deviation of the vertical due to the gravitational attraction of Table Mountain at la Caille's southern station, which was in Strand Street, Cape Town. Maclear's task was to recover la Caille's stations if he could, and in this he partly succeeded.

In the end he measured several base lines of his own and undertook very extensive and accurate survey work which is the direct fore-runner of the present Trigonometrical Survey of the Union. Much of this was done starting towards the end of Herschel's stay, using the sector used by Bradley in his work on aberration. Maclear lugged this monstrous instrument, which required a tent 17 feet high to protect it from the wind, all over the Western Cape, most of the way up Table Mountain, and nearly as far as the Orange River where a mountain, probably to the mystification of the present populace, rejoices in the name of Sectorberg.

In all this Herschel was a very useful source of ideas. He suggested the timing at a lunar eclipse of the interval between the obscuration of lunar craters at Feldhausen and the Observatory as the means of determining the distance between the two places. He discussed a possibility, which was actually tried out, of determining the distance between the Observatory and Simon's Town by simultaneous observations of rockets sent up from Muizenberg. Neither method worked, but adaptations of both methods are used in modern geodesy. When Maclear measured a base-line, Herschel measured

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a little base-line in the avenue at Feldhausen and triangulated it into Maclear's survey. When Maclear had trouble with a measuring rod being overset by the wind, Herschel proposed a plan for using rods with king-posts and weights, which would be more stable, and a scheme for measuring the gaps between their ends. From an old print showing Maclear measuring a base-line on the Parade (the buried guns defining its ends are possibly still there) it can be seen that Maclear adopted Herschel's suggestions.

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In all this Herschel was the amateur spectator, while Maclear toiled in the heat. It is a testament to the sincere friendship which existed between the two men that they remained on good terms when Herschel wrote, with reference to the over-setting of the rod in the following terms:—

"I am sorry for the accident but I confess I was at no time sanguine as to the completion of the base without some interruption of the kind. The rods are top heavy and in case of any new operation commenced here with such instruments I should urge on the attention of those concerned a thing which if you recollect I did at one time mention as no imprudent precaution . . .". The inevitable postscript read "The first 700 feet of the Irish base were obliged to be remeasured by an accident similar to yours". Herschel had gone to help one day with measuring a base in the low-lying ground to the north west of the Observatory, but one day was enough for him: - "I feel today so great an increase of certain very unpleasant sensations which were creeping over me the whole of yesterday, that I hold it very doubtful whether I shall be in a condition to come over tomorrow or at all events for more than an hour or two in the warm part of the day-indeed I begin to perceive that another entire day's duty in your swamp will go nigh to lay me up for the winter, and I cannot help feeling that there are many days work before that measurement will be completed—to say nothing of some unlucky jog which may render it necessary to remeasure the whole". For Maclear, Piazzi Smyth and the sapper detachment which was helping there was no alternative to the swamp.

In the same way, over the base-line on the Parade Herschel has to write "Your expedition in matters of business puts to shame by tardiness & proves to me that I am getting hardly fit to inhabit a bustling world like this. While I speculated on how long it is to take to get the guns—how long to get them sunk—how long to take up and sink again in consequence of detected errors—and how long to get all in order—behold your Parade base is measured—as it is I am rejoiced that I have escaped being present. That broil would have done me thoroughly. The next thing I expect to hear of is Messrs. Maclear, Smith, Williams & Co.—ill of brain fevers . . ." The writing and composition are even more erratic than usual for the letter is headed "Feldhausen, in the dark".

In March the Herschels sailed for England and the four years of co-

operation were over. Maclear and Herschel had obviously enjoyed themselves hugely, each sustaining the other. Herschel went back to be fêted and lionised and to be made a baronet by the new Queen at her coronation. For him the summit of his career had arrived. For Maclear it was only the beginning. With Herschel's inspiration and his own determination he had weathered four years which might have been disastrous. There lay before him another quarter of a century of productive work, and for both, the friendship of a life-time.

DAVID S. EVANS.

# SIR JOHN HERSCHEL'S CONTRIBUTION TO EDUCATIONAL DEVELOPMENTS AT THE CAPE OF GOOD HOPE

Herschel's general influence on culture and learning at the Cape was great. He gave numerous public lectures on a wide variety of topics, for he was scientist, poet and classicist. Indeed, he subsequently spent his years of retirement translating the Iliad into English verse!

He spoke French well, German passably and Dutch after a fashion. During one of his addresses he told his Cape audience that the advancement of a People's intelligence and fame did not depend upon a few successful philosophers toiling in their lonely studies and gathering great reputations for their learning and discoveries, but in the diffusion of knowledge among the masses of the people.

Even had Herschel's influence been confined to these general contacts he would have been a considerable figure in our cultural history. But Herschel did more than that. In the specifically educational sphere he conspired with a small select band to hammer out an idea which, translated by them into reality in a surprisingly short time, became the foundation from which the whole structure of education in South Africa was to rise before the century had come to an end.

First let us get a picture of the economic and social forces at work at the Cape just prior to and during Herschel's sojourn here. The educational move in which Herschel played a key role had implications that were so much at variance with the conservative, individualistic tradition of the calvinistic settlers that one finds it hard to believe that this introduction of what, in essence, was state secular control of education, occurred not only without opposition, but subsequently blossomed into a national system of schools.

It is, in fact, a striking example of how the skill and diplomacy of a handful of brilliant, altruistic and public-spirited men can set in motion a cultural

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change that, through normal channels of social evolution, would not have begun to operate for another fifty years.

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When Herschel arrived at the Cape in 1834, about 60,000 whites, and about twice this number of Hottentots, Coloureds and Malays, some concentrated in Mission settlements but most associated as servants and farm labourers with the whites, were scattered over a country more than twice the area of Britain. To describe the population as sparse is an understatement. Over thousands of square miles the Europeans averaged one-tenth of a person per square mile. To add to the difficulty of the dissemination of culture, it must be remembered that these one-tenths were separated from each other by vast and arid distances and virtually impassable mountain ranges (Michell's Pass and Bain's Kloof were only built ten years after Herschel had left the Cape) and that what roads existed were few and bad. Why then did men, absorbed in scientific research or public affairs, trouble themselves about the education of an alien population, so sparse, so scattered and so inaccessible? The explanation comprises several factors. The idea of education as a force of social reform was in the air. A great upsurging of the masses had occurred as a result of the political and social revolution in France, the industrial and social revolution in Britain and the economic and democratic revolution represented by the establishment of the American Colonies as separate states. These waves of social unrest, lapping the Cape somewhat languidly, were reinforced by a local social revolution. The environment, represented by the factors of build, climate, soil and aborigines, had, in the course of a century and a half, transformed a landless, mainly peasant or "burgher" middle-class stock, into a land-owning (on a vast scale), labour-controlling, proud and possessive class, aristocrats in all but the hereditary titles. These people felt and expressed the need, and demanded, sometimes only by implication, at other times quite vocally, education for their children.

But there were difficulties. Their wealth consisted almost entirely of vast extents of unsaleable land (since land could be had on the frontiers for the asking), great herds and substantial supplies of labour. Economically as well as ethnographically, therefore, the set-up was most unfavourable to the propagation of education.

Farmers and village traders lived largely by a system of barter and credit. There was little actual money in circulation. The Colonists literally did not have sufficient cash to establish and maintain a system of schools with permanent salaried teachers. Everywhere vagabond "meesters" were in charge of the young, giving some meagre and often faulty learning in return for their keep, their sole qualification a pair of soft hands. In 1840 over ninety such "meesters" were spread over the districts of Caledon, Graaff-Reinet and Somerset East alone.

Off-setting the remoteness and lack of finance of the country districts

was the unique position and function of Cape Town. Besides being, as one traveller described it, "a most stately thing, and the fairest Cape in the whole circumference of the Globe", Cape Town was what geographers call a "way" state, strategically and economically of the utmost importance, of intense interest to the leading maritime powers of the world. Such citystates are incessantly stimulated by ideas from all sides. If one adds to this the clear night skies of South Africa and the existence of an immensely rich flora and fauna, one can understand why leading scientists sojourned here, why both the local Governors and the Governors of the Indies (who often spent months here) were men of great vitality and considerable mental stature, and that, among many other notabilities, Captain Cook, Charles Darwin and Horatio Nelson once trod the streets of Cape Town. With such intellectual ferment constantly at work at the Cape, it is not necessary to seek further for an explanation as to why John Herschel took time off to collaborate with His Excellency, Sir George Napier, His Excellency's Secretary, John Bell, and the local scholar, schoolmaster and newspaper editor, John Fairbairn, to devise a system of education for the Cape.

We may legitimately conjure up a picture of Herschel, Bell and Fairbain habitually consorting at the newly-established Coffee Taverns to discuss matters of moment. A frequent topic was the low state of learning and culture at the Cape, even the Theatre having fallen into disuse since Lady Anne Barnard's day.

Out of these discussions, carried on on occasions in the presence of His Excellency himself, either at Rustenburg or within the precincts of the Castle, grew "The Idea" and "The Method" for its implementation.

Let us, they said, get a sound, impartial and intelligent man, able to organise and direct, and let us put education in his full-time and complete charge. Let us pay him well. If we get the right man he will make the right system. Since this "Commissioner for Education", or, as he came to be called when the appointment was actually made scarcely a year later, this "Superintendent-General" was to be a state official this meant the establishment of a state system of education, a move both daring and startling in a country where every aspect of the lives of the inhabitants was so completely dominated by the Church.

The germ of this idea was almost certainly culled by Herschel from Cousin's Report to the French Government on "The Condition of Public Instruction in Germany", published in English translation in England in the self-same year in which Herschel came to the Cape, namely 1834. Herschel's father, Sir William Herschel, though Astronomer to the English Court, was a German, and John Herschel, who thus had very close connections with Germany, must have been fully conversant with the contents of Cousin's Report.

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<sup>&</sup>lt;sup>1</sup>Cape <sup>2</sup>Cape

"The Method" to be used to implement the idea was one that seldom fails in the hands of intelligent men engaged in a good cause. Pourparlers between experts and men of influence were to crystallize out into carefully documented Memoranda, whereby the direct "approach" to the highest Executive Authority, in this case the British Colonial Secretary in Whitehall, would be made.

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glish nnects of Herschel played a notable part at all stages. The first overt step in this innocent intrigue was made in the Spring of 1837, after plans had been brewing for almost two years. Remember that these were leisurely times in which a reply to a letter to Britain usually arrived a year after its dispatch, provided the recipient was reasonably prompt! This step was the submission to John Herschel of a Memorandum <sup>1</sup> drawn up by Colonel Bell in behalf of His Excellency. It sought his opinion on the proposition that "to ensure the proper working of the system", there should be appointed "a sound, clear-headed man, either not belonging to the ministry, or so untinctured with prejudice in favour of this or that form of Christian Protestant Faith, as to constitute him an impartial Director-General of Public Education of this Colony".

The Memorandum declared that the Bible and School Commission, whose duty it was to provide public education, was a futile and moribund body. Herschel replied to this Memorandum in a letter dated February seventeenth, 1838 2 (the date is important, as we shall explain in a moment). In it he states emphatically and explicitly that the provision of education should be a function and duty of the State. When one pauses to consider that at that date no trace of State support, let alone State provision of education, existed in Britain, nor anywhere else for that matter save for the very recent developments in Prussia and in two New England states, one is forced to the conclusion that only the most exhaustive consideration of the problems involved, based on lengthy discussions with John Fairbairn and John Bell, and sparked by full knowledge of what was going on in Prussia, can account for this bold innovation in social theory.

Herschel goes on to say that the system of Government support for efficient public education must be adequate in extent and "systematic and steadily maintained in application. An essential character of a well-organized system is the direct responsibility of every member of it to a recognized official superior, and, ultimately, to a central opinion and power, acting on consistent principles, and calling for constant information on every point of practical detail. The shorter the chain, the more perfect the organization, and for the purpose in question I agree entirely with the concluding suggestion of the "Memorandum" that the central responsibility should be lodged in

 <sup>&</sup>lt;sup>1</sup>Cape Archives: Enclosure No. 1, Dispatch No. 11, 1838.
 <sup>2</sup>Cape Archives: Enclosure Number 2, Dispatch No. 11, 1838.

one individual. A Board of Educational Commissioners in a community like this must, from the very nature of the thing, be either a constant scene of dispute, or a body in which some prominent member suggests and acts for all, while the responsibility of his measures is divided among the number".

Lest the authorities should hesitate to implement such a proposal for fear that no man with the required qualities could be found, Herschel goes on to say: "The function is not calling for any very extravagant qualifications. Good plain sense, a general good education, with a high impression of its value and a proper appreciation of its ends and means, together with the talent of supervision and insight into human character, seem all the positive qualities needed. The absence of party spirit and bigotry on the one hand, and of the extreme of indifference for all religion on the other, seem to include the negative".

It is obvious that Herschel had already carefully studied the document that was to complete the official Dispatch, namely John Fairbairn's "Memorandum, 3 or Suggestions, for the Advancement of Education at the Cape", dated 19 February 1838 and was somewhat apprehensive of its effect. While it was a most astute move to include, as the final document in the Dispatch, a statement by the local educational expert in which the desirability, indeed, the vital necessity, of appointing a Director of Education, is taken for granted, and his manifold duties and responsibilities are enlarged upon, Herschel may have feared that Fairbairn had overstated his case. Even Herschel's prescription, considering the time and place, would take some filling! This emphasis on the concentration of executive power and responsibility in the hands of one man is again evidence of the thought which the three Johns had given to the elaboration of "The Method" and is further borne out by the dating of Herschel's letter and Fairbairn's Memorandum, which are obviously artificial, for both Herschel's letter of February 17th and Fairbairn's "Suggestions" of February 19th are the outcome of many months of thought and talk among the "conspirators".

Indeed, Fairbairn's Memorandum represents the fruits of a life time of experience in the detailed control of education and certainly took weeks, if not months, to compose. The dating of the documents within a day or so of each other, in an age where time was no great object, had the effect of suggesting both spontaneity and urgency. Both Herschel and Fairbairn were very clever men! The dating was thus deliberate, to make Fairbairn's detailed statement of this official's duties follow on Herschel's letter, which establishes the principle of the appointment without a detailed statement of the appointee's functions.

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<sup>&</sup>lt;sup>3</sup>Cape Archives: Addressed to His Excellency, and forming Enclosure No. 3, Dispatch No. 11, 1838.

Herschel, still confining himself to broad issues and general principles, goes on in his letter to emphasize that the success of a system of public education must stand or fall by the status of the teaching profession and that it is essential that the State should be liberal in respect of teachers' salaries.

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To quote Herschel's own words, as significant today as they were when he penned them over a hundred years ago:

"It is not in human nature that a service which is considered as adequately remunerated by a salary barely sufficient to maintain an individual, insufficient for a family, and accompanied by no power, no privilege, no honorary circumstances of any description, but, on the contrary, associated with proverbial drudgery, should carry with it any share of public self-respect".

Herschel insisted that the success of any system of education was inextricably bound up with the making of teaching an honourable profession. He declares, "To make the profession of education truly respectable it must be made an independent profession; one within the pale of which an ample reward may be found, and without quitting which proficiency may be followed by promotion". It is certain that Herschel's insistence upon this principle at this crucial phase in the development of education contributed in no small measure to the high status the profession enjoys in South Africa today, a status at least equal to that in the most advanced countries of Western civilization.

The portfolio of documents making up Dispatch No. 11 of 1838 consisted of Bell's Memorandum, Herschel's letter, and Fairbairn's "Suggestions", in that order.

This Dispatch was sent to Whitehall about the same time that Herschel returned to England, perhaps on the same ship.

Herschel thought it expedient to write a second letter to His Excellency, setting forth "the objects to be attained by the educational institutions of any country".

The fact that this statement of educational aims and ideals was not incorporated in the first dispatch makes it seem certain that it was written after its dispatch.

In this letter Herschel describes the aims of education as:-

- (i) "To form in the individual advantageous personal habits;
- (ii) To store the mind with useful knowledge and practical maxims, available for the demands of life;
- (iii) To enlarge the powers and capacities of the mind, and to elevate his propensities by familiarising him with trains of connected and serious thought, and with high examples of moral and intellectual conduct.
- (iv) To form good citizens and men by instructing them in the relations of social and civil life, and to fit them for a higher state of existence

by teaching them those which connect them with their Maker and Redeemer".

Herschel included in this letter hints on teaching methods and class-room discipline and procedure, drawing probably from memory from the writings of John Locke and Heinrich Pestalozzi. He urged particularly that pupils should be active participants and not mere passive listeners, thus anticipating the teachings of Professor John Dewey by almost a century.

He also advocated a system of adult education by means of public lectures, an aim he certainly had pursued in his own personal activities while at the Cape.

Herschel's statement of aims was incorporated at length in a second Government Memorandum, dated 23rd May, 1839, and probably designed to stimulate the Colonial Office, and bring matters to a head. It is thus certain that the letter as such was not included in the Dispatch. In consequence it remained lost for a long time. The Watermeyer Commission of 1863, eager to consult it, stated that they could find no trace of it. Dr. E. G. Malherbe was able to run it to earth in the Public Record Office, London (Vol. C.O. 48 (188)), while working on the manuscript of his well-known book, "Education in South Africa 1652-1922".

The bold proposal sponsored and presented so skilfully by the three Johns, and set forth in successive Government Memoranda, made so profound an impression on Lord Glenelg, Secretary for the Colonies, that he adopted it forthwith. Here was no attempt to anglicise the colonists, as Charles Somerset had attempted to do. Only the loftiest of motives inspired these men. So much attention is devoted to the one or two British officials, such as Somerset and Milner (both active here for very short periods), who sought to turn the Afrikander into an Englishman, that one is prone to forget the host of others, such as the three Johns here, and Sir John Cradock before them, and Sir George Grey after them, all of whom were inspired by only the finest motives.

Certainly Herschel thought of the inhabitants of the Cape, not as potential, if reluctant Englishmen, but as human beings, entitled to the finest and best in education that civilisation could provide . . . "to store the mind with useful knowledge, to elevate the intellect and enlarge its powers and capacities, to make good citizens and men".

The speed with which the scheme was now implemented was startling. It is difficult not to believe that the dispatch of the Memoranda was deliberately timed to coincide with Herschel's arrival in London. One cannot but feel that the unquestioning agreement of Lord Glenelg and the celerity with which he took action in a matter which was going to cost the British tax-payer a substantial annual amount that was bound to increase with the years, can only be explained on the hypothesis that representations were

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Lord Glenelg made £3,460 per annum immediately available, of which £560 was to be for the Superintendent's salary. There were, in addition, to be four teachers at £300 per annum each, four at £230 and four at £150. These were, for those days, substantial salaries.

The authorities at the Cape reacted equally promptly. Mr. James Rose-Innes, M.A., Professor of Mathematics at the South African College, was appointed first Superintendent-General of Education before 1839 was out.

He was given, as Herschel had intended he should be, a free hand to mould such a system of education as he felt best suited the country's needs. Invested with almost dictatorial powers and presenting his own budget from the floor of the old Cape House of Representatives, he proceeded to create a system of state-aided public schools and established standards of education that, by the close of the century, and under the guidance of his able successors in office, Dale and Muir, gave South Africa a proud and honoured place among the most highly cultured countries of the world.

If there is an empty niche in the corridors of the Department of Public Education of the Cape of Good Hope, it should be occupied by a bust of Sir John Herschel.

E. G. PELLS

#### THE CAPE IN THE 1830's

When the Mountstuart Elphinstone dropped anchor in Table Bay on the night of the 14th January 1834, she brought with her not only the Herschel family but also Sir Benjamin D'Urban, the new Governor of the Cape, and his lady. Sir Benjamin, whose name is among the most notable of colonial governors-notwithstanding the censure he later received-came to the Cape knowing full well that he had three contentious and far-reaching matters to which he must give early attention. The first of these was the new form of government which it was to be his task to introduce. This consisted of an Executive Council, consisting of the Governor, his second in command, the Secretary to the Government, The Treasurer-General and the Attorney-General, and a Legislative Council which included all the above officials plus five to seven unofficial members nominated by His Excellency and holding office during his pleasure. A great deal of adverse criticism of this arrangement was voiced in the pages of the S.A. Commercial Advertiser but the Council met for the first time on April 2nd, and such eminent Capetonians as J. B. Ebden, C. S. Pillans and Hamilton Ross served on it for a number of years.

The second imminent problem was the abolition of slavery. On the very day on which the Governor stepped ashore the Royal Proclamation announcing the conditions of emancipation throughout the British Empire was published in the local press. It will be remembered that all slaves over six years of age were to be apprenticed to their masters for four years from December 1st, 1834, and that the sum of £20,000,000 was voted by the British Parliament for the compensation of former owners. Of this however, the Cape's share turned out to be a quite inadequate £1\frac{1}{4}\$ million and the repercussions were to be one of the major stimuli of the Great Trek, in full spate by 1837.

The third and by no means smallest cloud on the horizon was the trouble on the Eastern Frontier where the Kaffir chiefs threatened an incursion and official policy was constantly under fire from the turbulent Dr. Philip. It was not till the very end of the year, however, that the sixth Kaffir War broke out, lasting until September of 1835. Far away as this must have seemed to the average man at the Cape when a journey to Grahamstown took eight days on horseback, it would be as well to bear this political background in mind when viewing the social life of Cape Town at this time. These topics would be very much under discussion in the club, wine-shops and confectioners.

Let us join Sir John and Lady Herschel on the deck of the ship as the sun rises on the famous skyline and imagine their impressions. Probably what struck them after the initial grandeur of the scene and as the light grew brighter, was the apparent barrenness of the Mountain after the English countryside to which they were accustomed. This was largely an illusion however, as there was plenty of natural vegetation on the lower slopes, even if the plantations of today were not yet planted. As their eyes fell lower they would see what another traveller a few years earlier described simply as "the little assemblage of houses called Cape Town." For a town of nearly 20,000 souls of all colours, such a remark seems to be somewhat short of the truth, though it is certain that most visitors received a poor impression of the town from the Bay—an impression soon dispelled when they had once stepped ashore.

After disembarking, the traveller was rowed ashore to the regrettably shabby wooden jetty which provided almost the sole harbour works for some years to come, and which lay near the north-east or Buren bastion of the Castle. Taking a carriage at this point, the Herschels would drive up to their first lodging—the Widow Rabe's boarding house in the Heerengracht (now Adderley Street). If we go with them we shall leave the entrance to the Castle on our left and bear right into Strand Street past the low line of unpretentious government buildings—the Commissariat stores, the Shambles, the Custom House and the Gaol—which flank the shore. Turning their

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heads from the unsavoury smells that must emanate from at least one of these, our travellers will find themselves driving along the lower side of the pleasant tree-encircled Grand Parade where troops may be exercising following the ceremonial reception of the Governor. The Parade covers not only its present area but much of that occupied by the railway terminus and all that lying between what are now Adderley Street and Lower Plein Street. At the further end stands the Commercial Exchange—not only the centre of Cape Town's mercantile life but the home of the South African Public Library as well.

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nbles, their On the upper side of the Parade Caledon Square can just be seen through the trees, beyond which lie the Great Barracks—formerly the Dutch East India Company's stores—and then, just above the thick foliage, the flat roofs of the yellow, grey or white business houses, two and three stories high. By now they will have reached the Heerengracht, but a quarter of a mile from the landing-stage, and on turning into the town's principal thoroughfare will be immediately struck by the central ditch which gives it its name, and the fine trees which line it. The surface is indeed macadamised but alas, there is as yet no paving of any sort and in wet weather it must be most unpleasant for the ladies. At least, however, if there has been rain one is spared the almost greater discomfort resulting from the excessive dust when the South-easter is blowing—dust which fills the air, dims the sun at times, clogs the pores and takes the green out of the vegetation.

This main street has many fine houses, whitewashed, stuccoed or of stone, and while there are many shops and offices, dwelling houses have not yet been completely thrust out. The street has definitely a foreign look to the English eye and this is increased by the brick "stoeps" raised above the street level on which the local residents can sit and watch the passing show—the long low creaking ox-waggons in from the country, driven by Hottentots with characteristic whoops and cracks of their great whips and laden with as much as 200 gallons of wine; the smaller horse-drawn waggons moving at a smarter pace; the Cape carts of the country visitors and the cabriolets, gigs and carriages of the townsfolk and gentlemen. On foot moves a motley throng of many shades of colour from white to negroid—Dutch, British, Hottentot and Malay with conical straw hat, not to speak of the many slaves of doubtful origin, going about their master's business with perhaps a more jaunty air, though underneath a little uneasy as to what this unknown freedom will really mean. There are 6,000 of them in the town alone.

If the first impression was that of a foreign city, the names of the shops and businesses the Herschels see around them will soon make them feel at home. Here is Mr. A. S. Robertson's stationery and bookseller's shop, Messrs. Thomson, Watson & Co., merchants and shipping agents, the

Cape Bazaar, run by Mr. J. Davies Gregory, and Mrs. Saunders' popular confectionery establishment.

We will leave Sir John and his family as they alight at No. 25 where the Widow Rabe awaits them, and take a further look around the town.

Three church towers rise high above the flat roofs with their occasional ornamented pediments. Higher up the Heerengracht the Groote Kerk still stands as it was before its reconstruction in 1836, the tower being the only part we would now recognise. Further to the right in Wale Street stands the new English Church of St. George, capable of seating a thousand people with the tower still in scaffolding. Away towards the Bay lies Martin's Lutheran Church in Strand Street. These are not the only places of worship in Cape Town, however, for St. Andrew's Scottish Church is in Somerset Road, the Roman Catholic Chapel is off Harrington Street and the Wesley Chapel stands at the corner of Burg and Church Streets. In Church Square that stormy petrel Dr. John Philip is a mighty exponent of the Word in the Union Chapel. For the coloured population the already aged South African Missionary Society Chapel stands in Long Street.

Apart from these the most prominent buildings of the town are the Castle, Barracks and Commercial Exchange, already mentioned, the Police Office (formerly known as the Town House) in Market Square, the Government Offices (now known as the Old Supreme Court), the beautiful Tax Office (now the Public Works Department offices) in lower Buitenkant Street, and of course the imposing Government House in the Gardens. Above the urban area several fine old family homesteads still dot the slopes of Table Mountain.

The streets of central Cape Town were laid out much as they are today, south of the dock and railway area. Apart from the Heerengracht, New Street (Queen Victoria Street) and Buitengracht had their central ditches which frequently gave off a most unpleasant odour, though the worser domestic refuse was taken in carts to the shore and there left for the sea to remove in its own good time. In [Green-] Market Square the vendors of fruit and vegetables could be seen under their rudely erected umbrellas any day of the week, while on market days the square would be filled with country waggons. Further off in Hottentot (now Riebeeck) Square, the people of that name would camp out on their occasional visits to the centre of Cape civilisation.

To the visitor in search of amusement, such as the frequent Anglo-Indian callers of that day—familiarly known as "Hindoos"—Cape Town lacked the bustle and the opportunities for entertainment which other cities offered. There was, however, a flourishing Amateur Theatre of which the building—now St. Stephen's Church—still stands in Riebeeck Square. Here plays were presented both in Dutch and English and from the lightest farce to classical tragedy—sometimes in the same programme. Othello was produced soon

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In addition, for the more privileged there were private concerts performed by a society known as "the Philharmonics", while at the other end of the social scale the Hottentots and Malays were well known for their talent for music.

Dinner parties and balls were frequent—fashion being dictated by Government House—and the Commercial Exchange was a popular venue for the latter. It was commonly believed that Cape ladies always made a dead set at the "Hindoos" but this we are assured was an exaggeration. Out-of-door pastimes included the races on Green Point Common and following the hounds if your horsemanship allowed. Should you merely wish to ride or drive abroad for the air, saddle-horses and conveyances could be readily and cheaply hired.

The "Public walk" in the Gardens was as popular then as now and at the top there were the remnants of a menagerie—once a considerable zoological collection but now shrunk to a lion and lioness, a tiger and some jackals. The lion gateway of the University buildings marks the site today. Another scene of open air recreation was the Ludwigsburg Garden in Kloof Street, the property of Baron Carl von Ludwig, tobacconist of 6, St. Georges' Street. Admission was by ticket only. Herschel made a sketch of the view from these gardens which was afterwards lithographed and presented to the Baron. (See No. 191 and note).

For those in search of more serious activities, Cape Town was, for its size, well supplied. The South African Literary and Scientific Institution, founded after early official censure in 1829, was by the mid-thirties a flourishing body under the Governor's patronage, with such well-known names as Bocherds, Philip, Faure, Maclear, Adamson and Centlivres Chase on the list of Council members. The Society had rooms in Looyers Place, near Government House, where the Museum, started by Dr. Andrew Smith, was also housed. This was open to the public on payment of 1s.

The Agricultural Society—founded as early as 1800—had its branches all over the Colony and with this we find the names of Wylde, van Breda, Stockenstrom, Chiappini and Fairbairn associated.

The South African Public Library, then in the mid-period of Alexander Jardine's twenty-one year directorship, had already acquired after sixteen years a considerable reputation and was described as one place the visitor should not miss. It did not cater however, for the reader of light literature and to satisfy the demand in this direction, the so-called "Popular Library" was opened in July 1834 to lend books at the rate of 1d. per week and achieved instant success.

Cape Town did not lack societies for charitable and other improving

purposes. The Committee for the encouragement of juvenile emigration (secretary J. Fairbairn), the Society for Promoting Christian Knowledge with its "gratuitous lending library" and the Maatschappij "Tot Nut van't Algemeen" with its school in New Street, were but a few of the bodies to which those in search of good works could devote their energies. The Somerset Hospital under Dr. Samuel Bailey, stood on the sea front where the New Somerset Hospital does today, whilst elsewhere was the Hospital for Infirm Government (late) Slaves and Apprentices.

The Cape Town Municipality did not come into existence until 1839 and the Burgher Senate having been dissolved in 1827, civic affairs were controlled by the Trustees of Town Property and the various government departments.

Although some visitors might remark on the scarcity of pot-houses, wineshops and the evil alleys in which they customarily flourished in European and Asiatic cities, there were others who were shocked at the degree of drunkenness to be seen at the Cape. The high-minded Captain Fawcett of the Hon. East India Company, who stayed here for eighteen months in 1835 and 36, declared it far exceeded India where he had believed drunkenness to have reached its summit. Canteens, he stated, abounded everywhere dispensing cheap brandy to the detriment of the English immigrant and the coloured population. The same Captain Fawcett expressed surprise at the number of retail shops in the town, which he felt sure demand could not warrant. Their stock consisted largely, he said, of rubbish from London, Birmingham and Liverpool and the local merchants were an unenterprising lot who showed no anxiety to promote the public weal. Of such stalwarts as John Bardwell Ebden, Hamilton Ross, Charles Stuart Pillans and W. G. Anderson, these are harsh words indeed and were not supported by other visitors who found here "all necessaries within reach of most persons". A few prices will afford some idea of the cost of living of the time. The market price of butter was 6d. to 11d. per lb., cheese 3d. to 4d. and honey 2d. to 3d. while oats were 4s. 6d. and wheat 7s. 6d. to 14s. per muid. Brandy was but £13 10s. per leageur of 152 gallons. The economic conditions of the next few years after 1834 were to make these prices rise considerably. Manufactured imports included straw bonnets (6s. to 18s. each), gent's boots (12s. to 18s. per pair), leather gloves at 10s. to 24s. per doz. and satin material at 3s. to 5s. per yard.

Although the subject of education is being covered by a separate article, no survey would be complete without mention of the South African College, founded in 1829 in the old orphanage building at the top of Long Street. With a staff of eight and an enrolment of some hundred students, South Africa's first university institution offered tuition in a wide field of subjects including six languages, philosophy, mathematics, astronomy, geography, physics, chemistry and biological sciences. Among the three professors was the cel who ta

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There is much more that one could recount of the original mother city but sooner or later the visitor to Cape Town must look further-round Devil's Peak and across the Cape Flats. Few of us today can imagine what it must have felt like to have an unknown continent stretching to the northwards—as was largely still the case in the 1830's. For some distance round Cape Town, however, the country had been long settled and possessed a population of over 13,000. More than one traveller speaks of the pleasant drive in the direction of Wynberg through the picturesque little village of Rondebosch. Charles Bunbury tells us how in 1838 the steep slopes of Devil's Peak were variagated with woods of silver trees—soon to be supplanted by the intruding pine—and how the villas and plantations were dotted about its base. The broad level road ran between high hedges and was shaded by oaks and firs. Neat cottages and gardens were scattered here and there and the public houses bore English names. Not many years earlier, however, three severed Malay heads were publicly displayed on this same road to give a name to Drie Koppen (now Mowbray)-a grim deterrent from the crime of murder.

In 1836 a new omnibus was introduced which ran a daily service to Wynberg carrying eight inside passengers and a couple more on the box. It took one hour only for the journey.

When Herschel established his household at Feldhausen, otherwise The Grove, Claremont, there was no village of that name, though the numerous estates round about would scarcely make him feel in want in neighbours. Many of the wealthy men of Cape Town built their houses out here, including Abraham de Smidt at Groote Schuur, Hamilton Ross at Sans Souci, the Hon. Henry Cloete at Ecklenburg and John Bardwell Ebden at Belmont, Rondebosch. Ralph Arderne, the timber merchant, had already settled at The Hill, and was planting his beautiful garden (now Claremont Gardens) while Claremont House, Newlands, Protea (now Bishopscourt), Boshof and Paradys were in easy distance of Feldhausen. Near Mr. Ebden's, the Deputy Quartermaster-General, Lt.-Col. Harry Smith, with his fascinating wife Juanita, was renting Charlie's Hope, where Rustenburg Girls' High School now stands. Many of Sir John's meticulous sketches give a graphic impression of this countryside as it was then.

For those who must go further afield, Simonstown was three hours from the Cape by postwagon, Stellenbosch five hours and Paarl another three. Progress across the flats was described as "tedious and heavy". If we want a good idea of conditions of travel into the country at this time, John Centlivres Chase has left us an accurate and enlightening record in *Itinerary and Expenses between Cape Town and Graham's Town*, published in the *Almanack for* 1835.

He directs us via Stellenbosch, Franschhoek, Genadendal, the Brede River, Mossel Bay, the Long Kloof ("George Town avoided being out of the way and bad accommodations") and Uitenhage. The journey took 84 hours spread over eight days and horse-hire and accommodation cost about £11 l0s. per person. By post waggon—all centres of habitation being connected by this mode of conveyance—the journey would take 107 hours' travelling time probably spread over nine days.

But it is the people after all who make a country and a city, and here the Cape of the 1830's was not lacking in personalities—many of whom left their mark on the country for ever. We think of John Fairbairn, South Africa's first great newspaper man; of his less respectable counterpart Joseph Suasso de Lima, that little hunchbacked Jew, always in trouble—founder of the first Dutch South African newspaper and unofficial poet laureate for all local events; of Charles Etienne Boniface who taught languages and music at the upper end of Long Street, edited newspapers and lampooned his puritanical fellows in satirical drama; of the Rev. Dr. Abraham Faure, divine, educationist and editor for 20 years of the first Dutch South African periodical; of John Bardwell Ebden, merchant and pioneer of banking; and of Sir John Wylde, dashing and debonair chief justice, at whose hospitable table Herschel must often have been made welcome, of John Philip, Thomas Maclear, Andrew Smith . . .

"Et sunt quorum non est memoria . . ."

A. M. LEWIN ROBINSON

### NOTE ON THE CAMERA LUCIDA

The Camera Lucida is an optical instrument that was much in use before the advent of photography and was of great assistance in the accurate drawing by hand of either near or distant objects for scientific purposes. In its simplest form, as described in the 8th edition of the Encyclopaedia Britannica (1854), where a good illustration of it may be seen, it consists of a piece of plain glass fixed at an angle of  $45^{\circ}$  with the horizon, a sheet of paper being placed horizontally some distance below it. Looking down through the transparent glass, the eye will see both the image of objects situated in front of it reflected from the surface of the glass, and also a pencil on the paper below with which the image can be traced. The image thus obtained is an inverted one, and to make it erect it is necessary to have the plain glass at an angle of  $22\frac{1}{2}^{\circ}$  with the vertical and in juxtaposition a plain mirror at  $22\frac{1}{2}^{\circ}$  with the horizontal. The double reflection will naturally bring the image the right way up. Further, a convex lens is required between the plain glass and the paper so that the

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image and the paper may be brought into focus at the same time. A small eye-piece will keep the eye in a constant position.

For practical use, in place of the transparent glass and the mirror a prism is substituted of which two sides are similarly inclined to the horizontal and vertical. The refractive power of this glass allows none of its rays to pass out except upwards to the eye, and as the eye cannot see the pencil and paper through the prism, the eye-piece must be placed so that only part of the pupil will be above the edge of the prism, the other part being in a position to look straight down to the paper. A concave lens is added for the use of those who find it necessary between the object and the image. The whole instrument, stand and all, can be packed into a box  $8'' \times 2'' \times \frac{1}{2}''$ . That used by Herschel is still in the possession of the Herschel family.

From the above it is clear that while Herschel's drawings made with the help of this instrument cannot be regarded as pure works of art, from the point of view of historical and topographical accuracy they possess exceptional reliability.

### THE CAMERA LUCIDA SKETCHES OF SIR JOHN HERSCHEL Bt. [1792-1871] Presented to the South African Public Library by the Herschel family, 1952

A. In album with title:

J.F.W.H.'s Camera Lucida Sketches
Vol.1.

Cape Flowers

Cape Views (sepia tinted)

and loose unsorted.

[Pink carnation, unsigned.] (loose)
[Notes on Cape flowers] Jan.-Aug. "To go with paintings of Cape flowers." (loose)

[Flower sketches, coloured by Lady Herschel]

(All flower sketches signed: "J.F.W.H. delin. Cam. Luc. (or c.l.), M.B.H. pinx."

M.B.H. = Margaret Brodie Lady Herschel.)

No. 2. Disa [ferruginea] . . . gathered by D. Stewart on the summit of the Table
Mountain, March 8, 1834. (7" x 5\frac{3}{4}") p.3

No. 5. Oxalis purpurea (Jacq), Gathered on the Heath near Feldhausen, July 7, 1834 (7" x 5\frac{x}{2}") p.5

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<sup>&</sup>lt;sup>1</sup>No. 2. This flower was coloured yellow by Lady Herschel. The only known colour of it today is orange-red, though a yellow variety is not impossible. The D. Stewart referred to is presumably Dr. Stewart, Lady Herschel's brother. He is mentioned by Sir John in lis letter to his Aunt Caroline of Jan. 21st 1834, viz. "Next morning early we landed under escort of Dr. Stewart, M.'s brother, and you may imagine the meeting." (Memoir and correspondence of Caroline Herschel, by Mrs. John Herschel, 1876, p.263.) This suggests that he was already at the Cape on the Herschel party's arrival. From information supplied by the Librarian of the Royal Society of Medicine, Dr. Duncan Stewart (1804-1875), L.R.C.S. (Edin.), M.D. (Aberdeen), was in the East India Company's service from 1825 to 1855, being for a time Superintendent-General of Vaccination. He attended H. at his death in 1871 according to Sir Thomas Maclear, and died at Tunbridge Wells which is only some twelve miles distant from H.'s home at Hawkhurst, Kent.

74			
No.	6.	Oxalis sulphurea [O. luteola]. Gathered in the Avenue at Feldhause 1834. (7" x 5]*"	
No.	9.2	Hebea Zeyherii of Ecklon [Gladiolus orchidiflorus]. Grown in my bul among a lot of mixed bulbs, Sept., 1835. (7" x 5\(\frac{1}{2}\)")	b Garden
No.	10.	Gladiolus punctatus (?tristis) [G. maculatus]. Gathered June 14, 18:	34 on the
No.	12.	Wurmbea (Capensis?) [W. spicata]. Eerste Rivier, Sep. 20, 1836.	
No.	14.	(7" x 5\\\ 5\\\ 1") Strumaria Crispa [Periphanes cinnamomea (Hessea crispa)]. Wynberga newly burned spot. April ?, 1835.	g Hill on
No.	15.	Disa (?) (Graminifolia) [Herschelia graminifolia (Ker)]. Gathen summit of the Table Mountain by D. Stewart. March 8, 1834. (6" x 4\frac{1}{8}"	ed on the
No.	16.	Disa Longicornis [sic] [Disperis capensis], July 20, 1834. (6" x 4\%"	
No.	17.	Morea Papilionacea. Cape District, universal on rising grounds of slope. Wynberg Hill, Sept., 1835. (6" x 4½"	
No.	18.	Vieussieuxia Glaucopis [Morea tricuspidata]. Observatory. Sept. 18 (6" x 4\u00e4")	35.
No.	19.	Gladiolus Brevifolius. Gathered on Stellenberg Heath, March 1, 18 (6" x 4\u00e4\u00e4"	34.
No.	20.	Rafnia Triflora—Gathered on the Hill above Constantia, Feb. 24, (6" x 45"	1834.
No.	21.		near the
No.	22.	Lobelia Triquetra (L. Coronopifolia). Gathered on the Stellenbe Feb. 24, 1834. (6" x 4\\$"	rg Heath,
No.	23.	Erica [cerinthoides]. Gathered on Wynberg Heath, Feb. 12, 18	
No.	24.	Orobanche Sanguinea [Hyobanche sanguinea]. Wynberg Flats, Sep. 1836. (6" x 4\frac{4}{8}"	
No.	25.		37. [Pencil
		[End of flower sketches]	
Her	schel	Sketches	
No.	[ ]	[Camera lucida sketches of the Cape]  [Map of Cape Peninsula as far south as Miller's Point showing lot Feldhausen, entitled:] Ground Plan no.3. [Pen & ink] (9¾ x 7)	
No.	132.	<sup>3</sup> View from A looking outwards along the North West Avenue [Fe July, 1834. [Sepia] (6" x 8") Ground Plan No.1. Feldhausen [house]. [Pen & ink] (7½" x 9½	ldhausen], p.18
		<sup>3</sup> Feldhausen. View from C looking inwards along the front of the thence out along the S.E. Avenue, July, 1834. [Sepia] (6" x 8")	p.21
No.	. 135.	<sup>3</sup> View looking inwards from D, to the house along the South Wes July, 1834. [Sepia] (6" x 8")	

No. 138.

No. 139.

No. 140. No. 141. No. 142. No. 143. No. 144. Nos. 145 & 146. No. 147. No. 148. No. 149. No. 150.4 No. 151. No. 152. No. 153. No. 154. No. 155. No. 156. No. 157. No. 158. No. 159. No. 160.

p.23

p.24

No. 161.

No. 165.

<sup>4</sup>No.

(6" x 8")

(6" x 8")

[Sepia]

[Sepia]

No. 136. [View looking down N.E. Avenue from house], July 19, 1834.

No. 137. [View of front of Feldhausen from south], Sep., 1834.

<sup>&</sup>lt;sup>2</sup> No. 9. This flower is not a native of the Cape Peninsula but of the Swartland district.
<sup>3</sup> Nos. 132, 134, 135. The letters A, C and D presumably refer to points on a map of the Feldhausen estate.

	[View of telescope at Feldhausen with Mountai			
	[Used as front. to "Results of Astronomical Ob.	servations"	.]	
		[Sepia]	(6" x 8")	p.25
No. 139.	Coming on of a North Wester, May 20, 1835. Ta	ble and De	vil Mountains	from
	the Shrubbery at Feldhausen.	[Pencil]	(6" x 8")	p.26
	[Used as illustration for article on Meteorolog	y, Encycl	opaedia Britan	nica,
	8th ed. 1857, v.14, plate 18.]			
No. 140.	[View of Feldhausen-two Coloured workmen i	n foregrou	nd]. [n.d.].	
		[Sepia]	$(6'' \times 7_8^{7''})$	p.27
No. 141.	View from Houts Pass [sic] [Hout Bay pass], Ju	ily 31, 183	4.	
		[Sepia]	(6" x 8")	p.28
No. 142.	View of the Cape Flats from Houts Pass above	e Constant	ia, July 21, 18	
		[Sepia]	(6" x 8")	p.29
No. 143.	[View across Cape Flats from Constantia show	ing Hotte	ntots Holland	Mts.]
	[n.d.]	[Sepia]	(5% x 8")	p.30
No. 144.	[View of Cape Peninsula mountains from acro	ss Cape F	lats]. [n.d.]	
		[Pencil]	(6" x 8")	p.31
Nos. 145	[Mountains as seen from near Stellenbosch: Sin	nonsberg, J	lonkershoek, St	tellen-
& 146.	bosch Mt. etc.] [n.d.]	[Pencil]	(5% x 8", 6"	x 8")
			1	p.32-3
No. 147.	Stellenbosch [street scene]. [n.d.]	[Pencil]	(6" x 8")	p.34
No. 148.	View from Stellenbosch [looking across Eerste I	Rivier], No	v. 11, 1834.	
		[Pencil]	$(5\frac{7}{8}$ " x $7\frac{7}{8}$ ")	p.35
No. 149.	Near Stellenbosch-from the road at back of t	he town,	Oct. 21, 1836.	
		[Pencil]	(6" x 7;")	p.36
No. 150.4	Altar Mountain-Donker-berg the southern but	tress of the	French Hoek	Valley
	[Groot Drakenstein mountains], Oct. 21, 1836.	[Pencil]	(5%" x 8")	p.37
No. 151.	[Fransch Hoek?] looking S[outh]. [n.d.]	[Pencil]	(6" x 8")	p.38
No. 152.	[Fransch Hoek?] looking S.W. [n.d.]	[Pencil]	(6" x 8")	p.39
No. 153.	French Hock [from the Pass to Villiersdorp, le	ooking we	st], Nov. 15, 1	834.
		[Pencil]	(6" x 8")	p.40
No. 154.	Toll Bridge beyond the French Hoek Pass [to	Villiersdo	rp], Oct. 22, 1	836.
		[Pencil]	(6" x 8")	p.41
No. 155.	Genadenthal, Oct. 24, 1836.	[Pencil]	$(5\% \times 7\%)$	p.42
No. 156.	Hot Baths at Caledon, Oct. 25, 1836.	[Pencil]	(6" x 8")	p.43
	Böhntje's Krall [Boontjes Kraal, nr. Caledon].	Oct. 25.	1836.	
	, , , , , , , , , , , , , , , , , , , ,	[Pencil]	(6" x 8")	p.44
No. 158.	De Koch's Place between Caledon & Palmiet	River, We		
		[Pencil]	(6" x 8")	p.45
No. 159	. Morchel's [Morkel's farm], Somerset [West]		,	
	()	[Pencil]	(7½" x 9¾")	p.46
No. 160	. Morchel's Vineyard, Somerset [West], C.G.H.			
	and the state of t	[Pencil]	(6" x 75")	p.47
No. 161	. Somerset Village, Oct. 27, 1836, Thursday.	[Pencil]	(6" x 8")	p.48
	View of Simons Bay, May 10, 1837. Hottentots			
100	[sic] Point.	[Pencil]	(6½" x 10¾")	_
	forel roun.	[remen]	(02 X 108 )	Profe

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p.12 or the p.13 Heath, p.13 p.14 to 30, p.14 [Pencil p.15

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p.24
district.
map of

<sup>&</sup>lt;sup>4</sup>No. 150. The names Altar Mountain and Donkerberg are not now known.

No. [ ]	Smyth (C. Piazzi) [Three views of the Herschel m	nemorial of	elisk at Feldha	usen,
	one with decorations and small inset of telescop	e in positi	on.]	
	•	[Sepia]	(5%" x 43")	p.54
			(58" x 21")	
			(41" x 7")	
No. 169.	[Twelve Apostles, en route to Hout Bay. n.d.]	[Pencil]	(6" x 8")	p.56
No. 171.	Hout Bay. [n.d.]	[Pencil]	(6" x 8")	p.58
No. 172.	Descending place from Summit of Table Mount	tain to Cap	pe Town. [n.d.	1
		[Pencil]	$(10^3'' \times 7'')$	p.60
No. 173.	Great Ravine of the Table Mountain [Disa Gor	ge], taken	in descent from	m the
	summit, 1837.	[Pencil]	$(6_4^{3''} \times 10_8^{3''})$	p.61
No. 174.	Cape Town from our first anchorage ["Mountstu	art Elphin	stone", Jan., 1	834?]
		[Pencil]	$(6\frac{1}{2}'' \times 8\frac{7}{8}'')$	p.62
No. 175.	[Western Table Mt. and Lions Head from the	sea, Jan.,	1834?]	
		[Pencil]	$(6\frac{1}{4}$ " x $8\frac{7}{8}$ ")	p.62
No. 176.	[Table Mt. and Twelve Apostles from west, down	to entran	ce to Hout Bay	. n.d.]
		[Pencil]	(6)" x $8$ 3")	p.63
No. 177	[Table Mt. from further out to sea with continua	tion furthe	er south.]	
		[Pencil]	$(68'' \times 88'')$	p.63
No. 178	This view of the Table Mountain & Cape of C	Good Hop	e distant [10]	miles.
	TEL TELL TRUIT 1 1 TELL TELL TO . 1 10 C	F	1	
	The Table Hill bearing by compass East half So	outh at [.	1	
	The Table Hill bearing by compass East half So	[Pencil]	$(6\frac{1}{4}^{n} \times 8\frac{3}{4}^{n})$	p.64
	The Table Hill bearing by compass East half So			p.64
Came				p.64
	ra lucida sketches of St. Helena]	[Pencil]	(6¼" x 8¾")	p.64
		[Pencil] es, March	(6¼" x 8¾") 22, 1838.	
No. 179	ra lucida sketches of St. Helena] . St. Helena, bearing W N W. Distant 5 or 6 mil	[Pencil] es, March [Pencil]	(6¼" x 8¾") 22, 1838. (6¾" x 9½")	p.64
No. 179	ra lucida sketches of St. Helena]  St. Helena, bearing W N W. Distant 5 or 6 mil  St. Helena no.2 [from the sea].	[Pencil] es, March [Pencil] [Pencil]	(6½" x 8¾")  22, 1838. (6¾" x 9½") (6¼" x 9½")	p.64 p.65
No. 179 No. 180 No. 181	ra lucida sketches of St. Helena]  St. Helena, bearing W N W. Distant 5 or 6 mil  St. Helena no.2 [from the sea].  St. Helena no.3 [Diana's Peak.]	[Pencil] es, March [Pencil] [Pencil]	(6½" x 8¾")  22, 1838. (6¾" x 9½") (6¼" x 9½") (6¾" x 9½")	p.64 p.65 p.65
No. 179 No. 180 No. 181 No. 182	ra lucida sketches of St. Helena]  St. Helena, bearing W N W. Distant 5 or 6 mil  St. Helena no.2 [from the sea].  St. Helena no.3 [Diana's Peak.]  St. Helena no.4 [Mountain peaks.]	es, March [Pencil] [Pencil] [Pencil] [Pencil]	(6¼" x 8¾")  22, 1838. (6¾" x 9½") (6¼" x 9½") (6¾" x 9½") (6¾" x 9½")	p.64 p.65 p.65 p.66
No. 179 No. 180 No. 181 No. 182 No. 183	ra lucida sketches of St. Helena]  St. Helena, bearing W N W. Distant 5 or 6 mil  St. Helena no.2 [from the sea].  St. Helena no.3 [Diana's Peak.]  St. Helena no.4 [Mountain peaks.]  St. Helena no.5 [Mountains.]	es, March [Pencil] [Pencil] [Pencil] [Pencil] [Pencil]	(6¼" x 8¾")  22, 1838. (6¾" x 9¾") (6¼" x 9¾") (6¾" x 9¾") (6¾" x 9¾") (6¾" x 9¾")	p.64 p.65 p.65 p.66 p.66
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No. 179 No. 180 No. 181 No. 182 No. 183 No. 184 No. 185 No. 186	ra lucida sketches of St. Helena]  St. Helena, bearing W N W. Distant 5 or 6 mil  St. Helena no.2 [from the sea].  St. Helena no.3 [Diana's Peak.]  St. Helena no.4 [Mountain peaks.]  St. Helena no.5 [Mountains.]  St. Helena no.6 Great Fault or Dyke just before the sea.]  St. Helena no.7 [Jamestown from the sea.]  St. Helena no.8 Longwood the seat of Napole 1838.	es, March [Pencil] [Pencil] [Pencil] [Pencil] [Pencil] [ore arrivin [Pencil] [Pencil] [Pencil] [Pencil]	(6½" x 8¾")  22, 1838. (6¾" x 9½") (6½" x 9½") (6¾" x 9½")	p.64 p.65 p.65 p.66 p.66 horage p.67 p.67 rch 22, p.68
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No. 179 No. 180 No. 181 No. 182 No. 183 No. 184 No. 185 No. 186 No. 187 No. 188	ra lucida sketches of St. Helena]  St. Helena, bearing W N W. Distant 5 or 6 mil  St. Helena no.2 [from the sea].  St. Helena no.3 [Diana's Peak.]  St. Helena no.4 [Mountain peaks.]  St. Helena no.5 [Mountains.]  St. Helena no.6 Great Fault or Dyke just before the sea.]  St. Helena no.7 [Jamestown from the sea.]  St. Helena no.8 Longwood the scat of Napole 1838.  Ascension [Island] N N W ½ W by compass—  St. [Shipboard scene, "Mountstuart Elphinstone"	es, March [Pencil] [Pencil] [Pencil] [Pencil] [Pencil] [Pencil] [Pencil] [Pencil] [Pencil]  -15 or 10 [Pencil] , 1833/34. [Pencil]	(6½" x 8¾")  22, 1838. (6¾" x 9½") (6½" x 9½") (6¾" x 9½") (6¾" x 9½") (6¾" x 9½") at the anci (6½" x 9½") (6¾" x 9½")  miles [distant (6½" x 9½")  Company wa (7½" x 9½")	p.64 p.65 p.65 p.66 p.66 p.67 p.67 p.67 p.68

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No. 19 No. 19 Nos. 1 to 19

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[Camera lucida sketches of the Cape, all pencil unless otherwise stated.]

No. 190. The Table Mountain, Lions Head & coast range of Ms. to S. from the deck of H.E.I.C. Windsor, March 11, 1838.

(6% x 161)

No. 191.5 Ansicht von der Capstadt und ihrer Umgebung von dem im Anbaue begriffenen botanischen Garten "Ludwigsburg" (in der Kloofstrasse zwischen Tafelberg und Lowenkopf) von Sir J. F. W. Herschel F.R.S. &c. . . . zum Zeichen der Freundschaft und Hochachtung dem Besizer des Gartens, Dr. C. F. H. von Ludwig, Ritter etc. gezeichnet und von diesem seinen Freunden zum Andenken gewiedmet, Lith, v. C. Obach, G. Küstner gedr. [Lithograph] (81 x 121") Signed: "J.F.W.H. 1835" in lithograph, followed by "Cam. Luc. 1835" in ink. No. 192. Cape Town and Table Bay from just above the Platte Klip, Table Mountain, Feb. 7, 1838. (10" x 151") No. 193. Cape Town & Table Bay from the Platte Klip, the spot on which Mr. Maclear's Zenith Sector will stand. Camera obscura, Feb. 7, 1838. (9" x 15") Nos. 194 Panoramic view from the Summit of the Table Mountain [Maclear's Beacon?], to 198. May 21, 1837. D.1. First segment . . . shewing the "Lion's Head". (6" x 161") D.2. Second segment . . . "Lion's rump" and Robben Island. (6" x 16]") D.3 Third segment . . . Head of Table Bay, Riebeek's Casteel, Klapmuts, etc. (6" x 161") <sup>6</sup>D.4. Fourth segment . . . From Table Bay to French-Hook [sic]. Shewing the Donkerberg [Groot Drakenstein Peak]; [H]Elderburg, & Paulusberg [Spitzkop]. (6" x 161") D.5. Fifth segment . . . from a point somewhat more to the right than D.1,2,3,4. Paulusberg to Hanglip [Hangklip] Pt. & Simon's Bay. (6" x 161") No. 199. Royal Observatory C.G.H. From beyond the swamps of the Liesbeek River, Jan. 2, 1837. (91" x 13") No. 200. View from the enclosure of the R. Observatory CGH. Looking towards Constantia & Muysenberg, Jan. 1, 1837. (101" x 131") Nos. 201 Semipanorama from the roof of the R. Observatory CGH, Jan. 1, 1837. & 202. E.1. First segment . . . Shewing the Muysenberg and Devil Mountain.  $(63'' \times 165'')$ E.2. 2d. segment . . . Lion's Head & Signal house on Rump & Table Bay. (61" x 165") No. 203. Table Mountain from the Portico of Mr. [J.B.] Ebden's new house [Belmont, Rondebosch], March 20, 1836. (8%" x 12%") No. 204. Table Mountain and Devil's Mountain from "Welterfrieden" [sic]-Mr. [P.B.] Borcherds first residence on the flats [Rondebosch], Feb. 1, 1834. (8\" x 11\") No. 205. The Stellenbosch Mountains—The [H]Elderberg, Donkerberg [Groot Drakenstein] and Simonsberg from End of the N.E. Avenue Feldhausen, July 11, 1837. [In the sketch H, has transposed the names of the Helderberg and Simonsberg.]

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tching p.69 No. 206. View of the End of the North East Avenue, Feldhausen, looking N.E. 125 paces above the gate, Aug. 12, 1837. (12\% x 9\%^3)

<sup>&</sup>lt;sup>5</sup>No. 191. This lithograph was also used by J. C. Poortermans, the first Cape Town lithographer, in his *Series of Lithographic drawings*, no. 9, 1845. There it bears the title: "View of the Commencement of the Botanical Gardens of Baron von Ludwig, Cape of Good Hope", and the artist's initials in the bottom lefthand corner are illegible in some copies. In the article on Poortermans in Q.B. 5(1), p.8, Sept. 1950, it is erroneously attributed to "Pieter von C. Obach". Poortermans can have had no part in the work bar the mechanical process of reproduction. For Baron Carl Ferdinand Heinrich von Ludwig (1784-1847) see Hoge (J.) *Personalia of the Germans at the Cape*, 1652-1806, in *Archives yrbk.*, 1946, p.251-2.

<sup>&</sup>lt;sup>6</sup>No. 197. The name Paulusberg for Spitzkop is not now known.

		On back: Photograph of Feldhausen house from the Avenue in 1898 at the same point as no.207.
No.	207.	View of Feldhausen CGH. from a point in N.E. Avenue 125 paces above the gate, Aug. 12, 1837. (12½" x 9½")
No.	208.	Feldhausen. North West Front. Looking along the SE Avenue from a point at Corner of the N.W. Avenue. [n.d.]
No.	209.	Feldhausen NW. front. Looking up the SW. Avenue across to the Fir Grove behind the Nursery, Feb. 12, 1837. (9\% x 12\%)
No.	210.	Feldhausen SE Front (my 1st study) with the Table Mountain seen as a background, July 29, 1837. (9\% x 12\%)
No.	211.	Feldhausen from the home end of the S.E. Avenue. Looking inwards and North West. My 2d study, Jan. 3, 1838. (9\%\ x\ 12\%\)
No.	212.	Feldhausen looking inwards and N. Westwards from the middle of the S.E. Avenue. (v) Devils Mountain, Jan. 3, 1837. (9\\$'' x 12\\$'')
No.	213.	Feldhausen Front Garden & N.E. Avenue from the Stoep at the Drawing room window. [n.d.] (9\% x 12\%)
No.	214.	View from the drawing Room North East Window. Front Garden & N.E. Avenue, Nov. 8, 1837.
No.	215.	Feldhausen Front Garden & N.E. Avenue from between the two oaks at the Court Yard Gate, 1834. (8\frac{1}{3}' x \frac{12\frac{1}}{3}')
No.	216.	Feldhausen. View of the N.W. Avenue and the Devils Mountain (a very careful portrait of it from the stoep opposite the door, Feb. 3, 1837. (9¾" x 14¾") [cf. no.132.]
No.	217.	Feldhausen. View from the NW. drawing room window. The N.W. Avenue & Devil Mn. [Nov., 1837?].
No.	218	Feldhausen. The New Garden from the farthest part of it among the oak trees, July 21, 1837. $(9\frac{1}{2}" \times 12\frac{3}{4}")$
No.	219	. Feldhausen. The Gardener's House in the Stable yard under the fir trees, Jan. 26, 1837.
No.	220	Feldhausen. View of the S. East Avenue looking outwards from my study door.  [n.d.] (9\[ \frac{n}{n}'' \times 12\[ n
No.	221	Feldhausen. The 20-feet reflector in process of dismantling, & the Equatorial house. Devil Mount in background, Feb. 5, 1838. [cf. no.138.] (10\frac{1}{8}" x 13\frac{1}{8}")
No.	222	Feldhausen. The Table Mountain on Fire. [n.d.] [Sepia] (10\[ \text{x} \ 13\[ \frac{3}{4} \])
No	. 223	3. View of Table Mountain from the Willow Garden. Feldhausen, Feb. 6, 1837.  (9\frac{1}{8}" \times 12\frac{3}{8}")
No	. 224	<ol> <li>Feldhausen. View of the Devil Mn. from the Side Avenue near the Water Garden. [n.d.]</li> <li>(9\frac{6}{8}" x 12\frac{7}{8}")</li> </ol>
No	. 22	<ol> <li>Feldhausen. The Devil Mountain seen from "Marg.ts two fir trees" where the swing was. [n.d.]</li> </ol>
No	. 22	<ol> <li>Feldhausen. The Devil Mn. from junction of the Vineyard Avenue with the Lily Park Serpentine walk. [n.d.]</li> </ol>
No	. 22	7. The Table Mountain from the Lily Park Feldhausen (a very elaborate & exact portrait of it), 1838. (9% x 15%)
No	22	8 Sunset behind the Table Mountain—View from the Protea Road 263 paces from

No. 229. Newlands Bridge over the Li[e]sbeek looking towards Feldhausen, Mar. 5, 1838.

No. 230. Newlands Bridge over the Lisbeck River. Looking towards Newlands, March 5,

the SW. Avenue Gate, May 25, 1834.

[Protea Bridge, Paradise Road.]

1938.

<sup>7</sup>No and on a by H. as

(8" x 12")

 $(15\frac{1}{8}" \times 9\frac{7}{8}")$ 

(93" x 15")

No. 231. 1 No. 232. 1 No. 233. 1 No. 234. 1 to 239.

No. 240 to 247.

No. 248. No. 249. No. 250. No. 251. No. 252. No. 253. & 254. No. 255. No. 255.

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No. 231.	Newlands [House] on the slope of the Table Mountain, near Feldhausen,
	Nov., 1837. (10¼" x 13¾")
No. 232.	"The Brewery" [or Papenboom, residence of Dirk van Reenen] on the slope of
	the Table Mountain near Feldhausen, Nov., 1837. (10\frac{1}{x} x 12\frac{3}{4}")
No. 233.	"Paradise"—On the higher slope of the Table Mountain, at the foot of the
	Precipice [Fernwood to Ascension Buttresses], Dec. 1, 1836. (10" x 13")
No. 234.	Panorama from Mr. Letterstedt's Boundary stone on Wynberg Hill [Hen and
to 239.	Chickens rocks], Aug. 12, 1837. (From rt. to lft.)
	H.1. First segment [Simonsberg to Somerset Sneeukop]. (6" x 16%")
	H.2. Second segment Simonsberg? to Tigerberg & the "flats". (6" x 16½")
	H.3. Third segment From the Tigerberg to the [King's] Blockhouse on the
	slope of the Devil Mountain. (6" x 16½")
	H.4. Fourth segment From the [King's] Blockhouse to the "Pedestal" Rock
	[Protea Buttress?], Table Mount. (9% x 15%)
	H.5. Fifth segment From the "Pedestal" Rock to Kerstenberg [sic].
	(9%" x 15%")
	H.6. Sixth segment Kerstenbosch to Hout's Pass (Hout Bay Pass, i.e.
	Constantia Nek]. $(9\% \times 15\%)$
No. 240	Panorama I. Taken from top of "Wynberg Stone" [Hen and Chickens rocks]
to 247.	[1837]. $(9\% \times 15\%)$
	1.1. First segment including 45° of azimuth from False Bay & Muysenberg etc.
	1.2. Second segment
	1.3. Third segment Wynberg Hill & Commencement of Table Mn.
	1.4. Fourth segment The Great precipice of Table Mountn.
	1.5. Fifth segment The Devil Mountain & head of Table bay & Obsy. flats.
	1.6. Sixth segment Cape Flats & hills from Riebeek's Casteel to Klapmuts.
	1.7. Seventh segment Cape flats & Stellenbosch mountains. [Unfinished?]
	<ol> <li>Eighth segment completing the Circle. Hottentots Holland, Hang]k]lip etc.</li> </ol>
No. 248.	Residence of [John] Steuart Esq. High Sheriff of the Cape Colony. Wynberg.
	[Old Wynberg]. Muysenberg in background, Jan. 6, 1838. (101" x 133")
No. 249.	Table Mountain. The Great Precipice [Fernwood, Ascension Buttresses etc.]
	from the Corner of Ecksteen's Vineyard. Kerstenbosch, Jan. 6, 1838. (101" x 137")
No. 250	. A1 A2 A3. Three first segments of Panorama A. From the slope of the Constantia
	Mountains S. of the Pass, Aug. 23, 1834. (93" x 151")
No. 251	. C1 and C2. First and 2d Segments of Panoramic view of False Bay from the
	Comp Point automity of C Africa (n.1)

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Cape Point—extremity of S. Africa. [n.d.] (93" x 151") No. 252. C3 and C4. 3rd and 4th Segments of Panoramic view of False Bay from Cape Point. (9%" x 15%")

No. 2537 Panorama B from the Summit of the Paarl Rock, [Jan., 1836.] (Both 9% x 15%) & 254. B1 and B2. The first two segments . . .

B3, B4, B5. The third, 4th & 5th Segments . . . [with figure of Sir Thos. Maclear]. No. 255. The Diamond Rock and its Cave "The Bower" from the foot of the Paarl Rock. (101" x 13%") [n.d.]

No. 259. Panoramic view from the [Table Bay of mountains across the Flats.] On tracing paper, stuck on mount of no.194. (21" x 18")

<sup>&</sup>lt;sup>7</sup>Nos. 253-54. A copy of this panorama with less detail but agreeing exactly in outline and on a roll 641" x 5", is in the Grey Collection. It was presented to Sir Thomas Maclear by H. as "an affectionate momento of the Paarl trip in January 1836."

No.	<ol> <li>Slough—the Observatory and 20-feet reflector (N.B. Before taking take to the Cape in 1834). [n.d.]</li> </ol>	it down to (7% x 121°)
	Sketches by Sir John Herschel made in England & Scotland [Pencil unless otherwise specified]	
In A	lbum.	
	[Collingwood, Hawkhurst, Kent. (c.7" x 9")]	
No.	581. [Garden scene], Aug. 11, 1859.	p.70
	582. [Garden scene], Aug. 10, 1859.	p.72
	583. [Garden scene], Aug. 13, 1859.	p.72
	584. [Garden scene], Aug. 12, 1859.	p.72
	585. In the Nightingale Walk, April 17, 1861.	p.73
	586 from the S.W. garden door, April 18, 1861.	p.74
No.	728. View from the Parsonage field, Hawkhurst, July, 1861.	p.75
No.	729 from the Garden lawn east of the house, July, 1861.	p.75
No.	730. Walks leading to the Pond, Aug., 1861.	p.75
No.	731. Walks leading to the Fernery, Aug., 1861.	p.76
No.	732. The Hermitage and Arch of Roots, Aug. 12, 1861.	p.76
No.	733. Walks leading up from the Pond, homewards, Aug. 14, 1861.	p.77
	734. Going down to Ayerst's Mill (Highgate). [n.d.]	p.77
No.	735. [Unnamed country lane presumably continuation of no.734]	p.78
	736. [? Presumably same neighbourhood as foregoint.]	p.78
	737. [Ayerst's Mill, Highgate ?]	p.80
	738. [Collingwood house—front elevation].	p.80
	739. [Ditto—rear elevation].	p.81
	740. [Collingwood from a distance].	5.81
	747. View from my bedroom window at Collingwood, June 3, 1870.	$(98'' \times 15')$
	748. View from my bedroom window Looking S.E., June 11, 1870.	
No.	762. Collingwood—South from the lawn opposite the Hut. Heigh	
	above paper = 15 in., June 14, 1870.	(98" x 15")
No.	763. The Baldwin Oak & entrance gate to the Pond From between	
	trees in the Hay field, July 4, 1870.	$(9\% \times 15)$
	[7] - I - L - District (- 0" - 12")]	
	[The Lake District (c.9" x 12")]	
NI	[These sketches were presumably all made in 1810.] 47. Windermere from Bowness.	p.82
No.		p.83
	49. Windermere from Lowood.	p.84
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No.		p.86
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No. 62. Borrodale seen from Derwent Lake.

No. 63. No. 64. No. 65. No. 66. No. 645. No. 646 No. 67. No. 68. No. 69. No. 70. No. 71. No. 72. No. 97. No. 98.

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### PUBLICATIONS OF SIR JOHN HERSCHEL IN CONNECTION WITH HIS STAY AT THE CAPE OF GOOD HOPE

Account of some double stars and nebulae observed at the Cape of Good Hope. (Mon. Not. R. Astr. Soc. 3:75-77, 1833-36.)

Instructions for making and registering meteorological observations in Southern Africa and other countries in the south seas and also at sea. (Cape Town, South African literary and scientific institution. Meteorological committee; G. Greig [printer]), [1834?]. [ii], 17p. 20cm. Published as part of the Committee's first report and reprinted from South African quarterly journal, 2nd ser. no.4, pt.2, p.321-337, Jul.-Sep. 1834.

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[Letter to Heinrich Christian Schumacher concerning observations at the Cape of Good Hope]. (Astr. Nachr. 12: col.273-276, 1835.)

Second report of the Meteorological committee of the South African literary and scientific institution; read 11th July, 1835. (S. Afr. quart. J., 2:382-388, 1835; Edinb. New Phil. J., 21:239-245, 1836.) Reprinted: Cape Town, "Gazette" office, [1835], 7p. Ascribed to Herschel in Roy. Soc. Cat. Sci. papers.

Speech delivered to the First anniversary meeting of the Friends of the Popular library, Cape Town, August 18, 1835.] (Report . . . of the Popular library, p.[3]-7, Cape Town, G. J. Pike [printer], 1835.]

Letter addressed to the Rev. Dr. [James] Adamson, relative to a course of study in the S.A. College, by Sir J. F. W. Herschel. Cape Town, "Gazette" office, [c.1836]. [ii], 3-12p. 19cm.

Account of a remarkable increase of magnitude of the star Eta in the constellation Argo, observed at the Cape, 16-17 Dec. 1837. (Mon. Not. R. astr. Soc., 4:121-122, 1836-39; Astr. Nachr., 15: col.311-312.)

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- Observations on stars and nebulae at the Cape of Good Hope. (Rep. Brit. Ass. 1838(2): 17-19.)
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- Notice of a chemical examination of a specimen of native iron, from the east bank of the Great Fish River in South Africa. (*Phil. Mag.*, 14:32-37, 1839; *Silliman's J.*, 36:213-214, 1839.)
- On the advantages to be attained by a revision and re-arrangement of the constellations, with especial reference to three of the southern hemisphere, and on the principles upon which such re-arrangement ought to be constructed. (Mon. Not. R. astr. Soc., 5:116-118, 1841; Mem. R. astr. Soc., 12: 201-224, 1842.)
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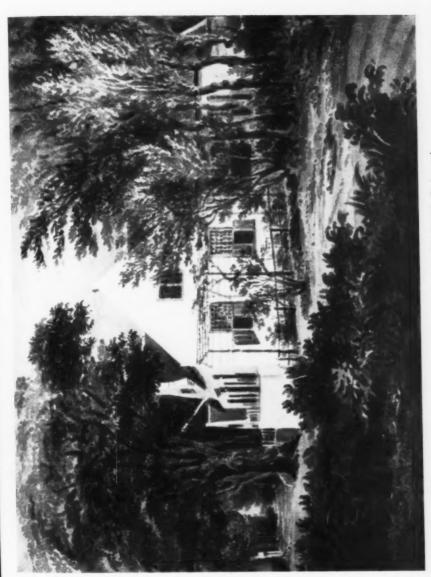
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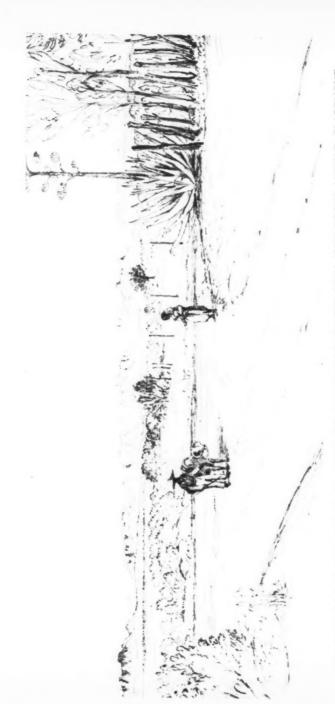
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134, FELDHAUSEN FROM THE NORTH-WEST. Sepia wash.



205. VIEW ACROSS THE CAPE FLATS FROM THE N.E. AVENUE, FELDHAUSEN, NOW GROVE AVENUE, CLAREMONT.



203. TABLE MOUNTAIN FROM MR. J. B. EBDEN'S HOUSE, BELMONT, RONDEBOSCH.



199, ROYAL OBSERVATORY FROM BEYOND THE LIESBEEK RIVER SWAMPS.



232. "THE BREWERY" or PAPENBOOM, NEWLANDS.



192. CAPE TOWN AND TABLE BAY FROM JUST ABOVE PLATTEKLIP GORGE.



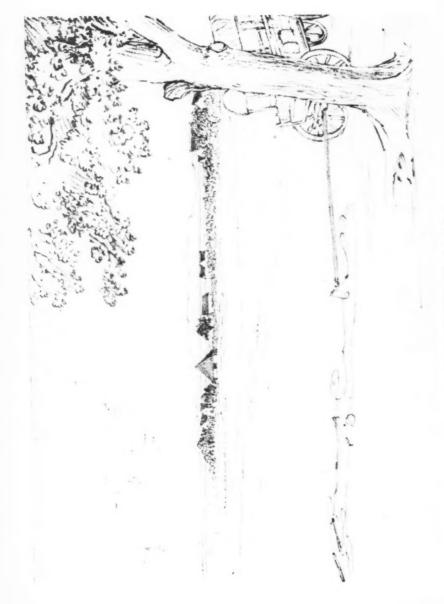
228. SUNSET BEHIND TABLE MOUNTAIN, VIEW FROM PROTEA ROAD.



147. STELLENBOSCH STREET SCENE.



255. THE DIAMOND ROCK, PAARL, AND ITS CAVE, "THE BOWER."



161. SOMERSET WEST VILLAGE, 1836.





156. CALEDON BATHS.



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work, Student Christian Association of S.A.

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S.A. Weight lifter & body builder; official organ of the S.A. Amateur Weight Lifting Union. The Editor, Clarence Oehley, c/o

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Pretoria. v.8, no.2, Feb. 1956. M. Tora ya ku Libelela. Watchtower Bible & Tract Society, Private Bag, P.O. Elandsfontein, Tvl. v.6, no.8, Aug. 1955. Previous issues published in Rhodesia.

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### CHANGES OF TITLE, ADDRESS, INCORPORATIONS, ETC.

The Bluestocking became annual with v.25, no.1, June 1957.

Catholic Youth & Family is now published by The Archdiocese of Durban, P.O. Box 217, Durban.

Femina & Woman's Life incorporated Homstead from 31st October.

Handelaar. New address of publisher: P.O. Box 3957, Cape Town.

Hi-Note was incorporated in Zonk from Aug. 1957.

Lemas Journal became:

The Footplate with v.33, no.7, July 1957. New address of Head Office of S.A. Locomotive Engineers' Mutual Aid Society: P.O. Box 2308, Johannesburg.

Die Lewe was incorporated in Die Transvaler

as from Nov. 1957.

National Institute for Road Research. New address: Private Bag 191, Pretoria.

Open Road became a new series, v.1, no.1, Aug. 1957.

Rhodes University Department of Ichthyology. Ichthyological Bulletin became monthly with no.3, July 1957.

S.A. Jewish Frontier became monthly with v.14, no.17, Sept. 1957.

S.A. Racehorse increased price: 7/6 p.c. Tara News resumed publication Oct. 1957. Transvaal Mine Medical Officers' Associa-

tion became:
Mine Medical Officers' Association with

Mine Medical Officers' Association with the issue of the Proceedings v.37, no.360, May/June 1957.

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Facsimile reprint. Limited ed. of 500 copies. Witwatersrand, University of the. Library. List of periodicals . . . received currently, January 1957; alphabetical and classified.

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### PHILOSOPHY, PSYCHOLOGY & **ETHICS** WYSBEGEERTE, SIELKUNDE EN SEDELEER

Federasie van Afrikaanse Kultuurvereniginge. Referate gelewer by geleentheid van die dertiende tweejaarlikse kongres van die F.A.K. en die Volkskongres oor jeugsake ... Oktober 1956, Bloemfontein. Jobg., F.A.K., 1957. [iii], 5-77 p. 173cm. Nischalananda, Swami. Ten easy lessons in Yoga for the layman. Durban, Yoga institute, Box 570, [1957]. viii, 28 p. pls. (181.4)18 cm. 3/-. Schlebusch, B. J. Inleiding tot die experimentele sielkunde; 2de druk. Kpstad., Juta, (1957). [viii], 151 p. illus., tables. 27 cm. 17/6. (150.72)Valkhoff, Marius. On the edge of beyond: three essays on parapsychology. (Jobg., Constantia, 1957). [vi], 9-38 p. 21cm. (Publications of the South African society for psychical research no.1). 3/6. (133.072) Reduced typescript.

### RELIGION/GODSDIENS

Botes, David Hermanus samesteller. Dagboek, vir die jeug. Bloemftn., SACUM, (1957). viii, 9-374 p. 13½cm. 12/6. Brockmann, Daniel Matthew. The scripture lesson in practice. Stellenbosch, SCA, 1957. [vii], 9-144 p. 18cm. 10/-. (220.07)Canright, D. M. Wie het die Sabbat tot Sondag verander-Keiser Constantyn of die Roomse Pous? in Afrikaans vertaal deur ds. H. C. J. Flemming. Kpstad., N.G. kerkuitgewers, (1957). [13] p. 18cm. 6d.

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Robertson, Hector Menteith. South Africa: economic and political aspects. Durham, N.C., Duke university press; London, C.U.P. for Duke University Commonwealth-studies center, 1957. x[iii], 3-192 p. 20½cm. (Duke university Commonwealth-studies center, publication no.2) (326(68)) Bibliography, pp.149-184, \$3.50.

Schoell, Franck Louis. Les tensions raciales dans l'Union sud-africaine et leurs incidences internationales. Genève, E. Droz; Paris, Minard, 1956. [iv], 7-125 p. 23 cm. (Publications de l'institut universitaire de hautes études internationales no.25).

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Suid-Afrikaanse Buro vir Rasse-Aangeleenhede. Drankverskaffing en die Bantoe; simposium; agste jaarvergadering van . . . SABRA. Stellenbosch, SABRA, 1957. [iii], 74 p. tables. 21cm. 6/-. (326:178.4)

### ECONOMICS & BUSINESS EKONOMIE EN HANDEL

Blann, Basil Edward John. Principles of South African income tax; 1957 cumulative supplement. Durban, Butterworth, 1957. [iv], 5-56, lxxi p. tables. 24cm. 15/-. (336.24) Crawford, Gordon P. The South African commercial directory . . . Jobg., Crawford publishing co., (1957). v, 281 p. 21½cm. (303) Graaff, Johannes de Villiers. Theoretical welfare economics. Cambridge, C.U.P. 1957. x, 178 p. diagrs. 21½cm. 28/-. (330.1)

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— What every farmer should know about income tax; 2nd ed. C.T., Legal & financial publishing co., (1957). [i]iii, 50 p. 22cm. (336.24)

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Silke, Aubrey Samuel. Commentary on the Income tax act, 1957... C.T., Juta, 1957. [ii], 34 p. tables. 23½cm. (336.24)
In back pocket of his "Silke on South African income tax", 1957.

— The 1957 income tax legislation in the Federation of Rhodesia and Nyasaland...

C.T., Juta, 1957. [iii], 28 p. 25cm. 10/6.

### ADMINISTRATION/ADMINISTRASIE

Gardiner, Gerald. The South African treason trial: (speech delivered . . . on February 4th, 1957). London, Christian action, (1957). [11] p. 211cm. (Stafford Cripps memorial pamphlet, no.2). 9d. (968.065)Harris, B. G. A. samesteller. Die munisipale verkiesings ordonnansie, Transvaal, no.4 van 1927 (soos gewysig) . . . Boksburg, Constable (pty.) ltd., [1957]. [iii], 63, 64-69 + [iii], 63, 64-97 p. illus., 22½cm. 63/-(352.004)Afrikaans & English. Sachs, Emil Solomon. Rebels daughters . . . [London], MacGibbon & Kee, (1957). [iv], 5-238 p. tables. 22cm. 23/6. (331.88187)Garment workers' union of South Africa.

### MILITARY SCIENCE KRYGSWETENSKAP

Johannesburg. Africana museum. Military medals of South African interest: an exhibition . . . Jobg., the Museum, 1957.

[v], 230 leaves. illus. 25cm. (355.134) Mimeographed. Afrikaans & English.

McKenzie, Angus George. The Dukes: a history of the Duke of Edinburgh's Own Rifles 1855-1956. C.T., Galvin & Sales for the Regimental council of the Duke of Edinburgh's own rifles, (1957). [xi], 234 p. front.(col.), pls., maps. 21½cm. (355.09687)

### EDUCATION/ONDERWYS

Laerskool Groote Schuur. Laerskool Groote Schuur, 1936-1957, jubileumblad. Rondebosch, die Skool, 1957. 64 p. front., illus., ports. 24½cm. (372.968712)

Opvoedkundige Studies; uitgegee deur die Werkgemeenskap te bevordering van die pedagogiek as wetenskap, Fakulteit opvoedkunde, Universiteit Pretoria, 1957. 2v. 21cm. No.16. Heelkundige leesonderwys; deur B. F. Nel, P. M. Robbertse, F. J. J. Herbst. Summary in English. 1956. No.17. Die personalisme van Kohnstamm

en die betekenis hiervan vir sy prinsipieelpedogogiese denkbeelde, deur dr. O. C.
Erasmus. Summary in English. 1957. (370)
Union of South Africa. Education, Department of. National bureau of educational &
social research. Bursaries available at South
African universities, excluding postgraduate bursaries. Pretoria, the Bureau,
1957. [i], 154 p. 33cm. (378.34)
Afrikaans & English. Mimeographed.

— Post-graduate scholarships and bursaries available to South African students in the Union and overseas, 1957. Pretoria, the Bureau, 1957. [i], 70 p. 33cm. (378.34) *Mimeographed*.

Van Wijk, Stanley L. Die film as opvoedkundige hulpmiddel; met spesiale verwysing na sy gebruik in Suid-Afrika. Pretoria, Publikasies- en navorsingskomitee van die Universiteit van Pretoria, [1957]. [i]xi, 262 p. tables. 21½cm. (371.335) Literatuurlys, pp. 254-262.

### SOCIAL & WELFARE WORK SOSIALE EN MAATSKAPLIKE WERK

Boy Scouts Association of South Africa. The history of Scouting in South Africa/Die geskiedenis van Padvindery in Suid-Afrika; ed. by Carel Birkby from material supplied by the Boy Scouts association; Afrikaans A. J. J. van Pletzen. (Jobg., the Association, 1957). [i], 3-96 p. illus., ports. 25cm. (369.43) Goodman, Isaac. The 60th birthday of the Johannesburg Jewish guild, 1897-1957: our Diamond jubilee. [Jobg., the Jewish Guild, 1957]. 48 p. illus., ports. 28cm. 2/-. (360) Wright, C. W. Die vorm en aard van die rehabilitasie van belemmerdes in die Verenigde State van Amerika en in Kanada; synde 'n verslag van 'n studie-besoek . . . onder die beskerming van die Carnegie corporation of New York. [Pretoria], (die Departement van Arbeid, 1957). [iii], 180 p. 321cm. (331.59)Gemimeografeerd.

### SOCIAL LIFE & CUSTOMS LEEFWYSE EN GEWOONTES

Erasmus, Pieter F. Towerbeelde by die aandvuur: [Zoeloe legendes]. Jobg., APB, (1957). [v], 146 p. 18cm. 9/6. (398.2) Future Bride. Future bride: a digest for the future bride; (ed. Bernice Lieberman). (Jobg., "Future bride", Box 4960, 1957). 112 p. illus. 27cm. (Seal publication). 7/6. (392.5)

Roberts, Bruce. How to write good letters; (2nd ed.). London, C.T., Longmans, (1957). [vi], 33 p. 18cm. (651.75)

### PHILOLOGY/TAALKUNDE

De Villiers, A. M. M. en andere. Afrikaanse spreekwoorde, gesegdes, ens. . . . 17de druk (hersien). Pretoria, van Schaik, 1957. [ii], 3-193 p. 21cm. (439.363)De Villiers, Meyer. Nederlands vir Suid-Afrika: 2de verbeterde druk. Kpstad., Nasionale boekhandel, 1957. x, 86 p. 18cm. 8/6. (439.315)Jacobs, Johannes Frederik en Afrikaanse Pers-Boekhandel. Komitee vir skoolboeke. Mening en betekenis; moeilike Afrikaanse woorde verklaar. [Jobg.], APB, [1957]. [v], 7-191 p. 21cm. 10/6. Union of South Africa. Education, arts & science, Department of. National council for social research. The teaching of English through literature: report on a study-tour of schools and universities in England, France and Germany, by Professor W. H. Gardner. [Pretoria, the Council, 1957]. [iii], viii, 191 p. tables. 33 cm. (Overseas travel grants, report no.9). (420.7) *Mimeographed*.

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### PHILOLOGY—BANTU TAALKUNDE—BANTOE

Franz, Gottfried Heinrich. Motsosa-lenyôra
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2 v. 18cm. (496.3433-5)
Pedi grammar.

De Villiers, F. J. and Potgieter, C. J. Uthandi nonomsa incwadi yesiXhosa yabantwana . . . Bloemftn., Via Afrika publishers, [1957]. 2 v. illus.(col.). 21cm. Xhosa readers. (496.3441-7) Ntsanwisi, H. W. E. Makomba-ndlela, Tsonga-leesreeks . . . (Jobg., Voortrekkerpers, 1956). 4 v. illus. 20½cm. (496.3423-7) Pahl, H. W. and Mesatywa, E. W. M. Ulwimi lwesiXhosa, junior certificate. (Jobg.), APB, (1957). [ix], 125 p. 20½cm.

### PUBLICATIONS IN BANTU LANGUAGES UITGAWES IN BANTOETALE

Bartlett, W. T. Incwadi yeSambulo . . . Kenilworth, C.P., Sentinel publishing co. [1957?]. [iii], 5-78 p. front., illus. 19cm. 2ulu; Revelation. (496.3442:228) Davy, W. L. Cinshi cileisa? Kenilworth, C.P., Sentinel publishing co., [1957]. [iv], 7-136 p. front.(col.), illus. 19½cm. Bemba; What is coming? (496.3315:232.6) [cmbi: larges N. Illusaleu kulte Muntuka.

Gumbi, James N. Ukuzalwa kukaMuntukaziwa. [Jobg.], APB, [1957]. [v], 5-73 p. 18cm. (496.3442-83)

Helmstetter, C. M. M. Inkcazelo yencwadi yemfundiso yobukristu ngesiXhosa . . . (Umtata, Mission press St. Patrick's, 1957). [iii], 5-392 p. 18½cm. (496.3441:230.2) Xhosa.

Matsebula, James Shadrack Mkhulu comp. Iqoqo lezinkondlo. Pmbg., Shuter & Shooter, [1957]. [iv], 136 p. 18cm. 5/-. Zulu poems. (496.3442-81)

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Mohapi, M. Molelekoa. Sebobolane. [Jobg.], APB, [1957]. [iii], 7-64 p. 18cm. S.Sotho poems. (496.3432-81)

Maduna, E. D. Lemuka izwe elihle. Pretoria, van Schaik, 1957. [iv], 5-98 p. 18\(\frac{1}{2}\)cm. Zulu; "The vanishing world": a novel.

(496.3442-83)

Maumela, T. N. Tshililo. Pretoria, van Schaik, 1957. [v], 7-68 p. 18½cm. Venda play. (496.3431-82)

Ngubane, Jordan K. Uvalo lwezinhlonzi. [Jobg.], APB, [1957]. [v], 7-103 p. 21cm. Zulu novel. (496.3442-83)

Phatudi, E. M. Thaka ye kgwadi. Bloemftn.. Via Afrika bockwinkel/book store, [1956]. [j], 112 p. 18cm. (496.3433-83) Pedi novel.

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Ramathe, A. C. J. Tsepo. [Jobg., APB, 1957]. [iii], 5-102 p. 21cm. (496.3434-83) Tswana novel.

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Isang Pilane. [Jobg.], APB, [1957]. [i], 3-57 p. pl.(port.). 18cm. (496.3434:920) Tswana biography.

Spicer, William A. Lemihla yethu ngokokukhanya kwesiprofeto. Claremont, C.P., Sentinel publishing co., [1957]. [iii], 5-184 p. front., illus. 19½cm. (496.3441:230) Xhosa; Our day.

Spiritual Heart Mirror. Moyo wa mutu. (Pretoria, Pan-African gospel publishers), [1957]. 34 p. illus. 18cm. (496.318:234) Swahili-Congo.

— Muchima wa muntu. (Pretoria, Pan-African gospel publishers), [1957]. 52 p. illus. 15cm. (496.3315-234) Kaonde.

— Umutima wa muntu ifyo waba. (Pretoria, Pan-African gospel publishers), [1957]. 22 p. illus. 21½cm. (496.3315:234) Chibemba.

White, Ellen Gould. Kulwana ku pati . . . Kenilworth, C.P., Sentinel publishing co.,

[1957]. [iii], 4-458 p. front., illus. 19½cm. Tonga; Spirit of redemption. (496.3345:232)

#### SCIENCE/WETENSKAP

Berg-Sonne, N. Plane co-ordinate geometry and trigonometry; 2nd ed. with corrections. Jobg., Witwatersrand university press, 1957. [v], 131 p. diagrs. 24½cm. Commission pour la Cooperation Technique en Afrique au sud du Sahara. Correspondant scientifique interafricain pour la géologie. Geological bibliography of Africa south of the Sahara: 1. Bibliography of the Karroo system. London, C.C.T.A., [1957]. [iii], 111 p. 24cm. (556)Hales, Anton Linder. The interior of the earth: inaugural address . . . August 1956. Jobg., Witwatersrand university press, 1957. [ii], 3-12 p. maps, diagrs. 24½cm. (6th Bernard Price memorial lecture). Williams, A. A. B. Some notes on soil mechanics. Pretoria, National institute for road research, S.A. C.S.I.R., 1957. [iii], 20 leaves. 14 pls.(diagrs.), tables. 32cm. Mimeographed. (625.73)

#### ZOOLOGY/DIERKUNDE

Ford Motor Company of South Africa Ltd.
Do you know this bird? a Ford selection of popular South African birds . . . (C.T., the Company), [1957]. [48] p. illus.(col.). 15 x 20cm. (598.2968)
Herholdt, Hannes. As die skaduwees daal . . . Jobg., APB, (1957). [vii], 100 p. pls. 18cm. 9/-. (591.5)
Stories oor diere.

### MEDICINE & NUTRITION GENEESKUNDE EN VOEDING

Afrikaanse Huisdokter: 'n volledige gids vir gesondheid en siekteversorging . . . Durban, Humphris-Allen, Waverley (edms.) bpk. [Umbiloweg 622], 1956-7. 3 v. illus., pls. (col.), diagrs. 24cm. (610.3) Conseil Scientifique pour l'Afrique au sud du Sahara. Nutrition research in Africa south of the Sahara. (London, Joint secretariat C.C.T.A./C.S.A.), 1957. [v], 197 p. 24cm.

Du Toit, Maria L. Die helende hand in die Soedan: 'n oorsig oor die mediese werk van die Ned. Geref. kerk in die Soedan. Kpstad., N.G. kerk-uitgewers ten behoewe van Algemene sendingkommissie, (1957). [vii], 52 p. front.(port.), illus. 18cm. 1/-. (610.9669)

Gelfand, Michael. The sick African: a clinical study; 3rd ed. C.T., Juta, (1957). [xii], 13-866 p. illus. 24cm. 77/6. (616) Goldman, Louis. Angry young doctor. London, Hamilton, (1957). [xiv], 114 p. 18½cm. 5/-. National health service in Britain. Author is a South African. (610.942) Vane, Michael. Black magic and white medicine; a mine medical officer's experiences in South Africa, the Belgian Congo... London, Edinburgh, Chambers, (1957). [ii], 3-254 p. front., pls. 21½cm. 20/-. (610.92)

#### AGRICULTURE/LANDBOU

Beater, B. E. Soils of the sugar belt, part one. C.T., O.U.P. for the University of Natal, 1957. [x], 103 p. pls., map(fold. in back pocket), tables(some fold.). 21½cm. (Natal regional survey, report no.3). 35/-. Natal north coast. (631.47)
Hurwitz, Nathan. Agriculture in Natal 1860-1950. C.T., O.U.P., for the University of Natal, 1957. viii, 123 p. maps, tables. 21½cm. (Natal regional survey, v.12). 32/6. (309.1684)

Ko-operatieve Wijnbouwers Vereniging van Zuid-Afrika. A survey of wine growing in South Africa 1956-1957. Paarl, the Public relations department of the K.W.V., [1957]. [i], 3-31 p. illus., tables. 25cm. (663.2) South African Wool Board. On veld and farm; comp. by A. J. Hanekom... Pretoria, the Board, [1957]. [iv], 5-52 p. illus., pls., map. 20½cm. (Educational series 2). (636.3) Afrikaans & English.

### APPLIED SCIENCE & USEFUL ARTS TOEGEPASTE WETENSKAP EN KUNS

Anglo American Corporation of South Africa Ltd. The Orange Free State goldfield: a record of the discovery of gold in the Orange Free State . . . (Jobg.), the Corporation, [1957]. 64 p. illus.(some col.), maps (col.), plans, diagrs. 22½cm. (622.09685)

Denver Equipment Co. S.A. (Pty.) Ltd. [D.R.L. pump troubles . . . for the men who maintain and operate D.R.L. pumps] . . . (Jobg., Denver equipment co.), [1957]. 20 p. . . (621.64) "Engineer & Foundryman". 1936-1957 in service to the metal industries. Jobg., Lawrence H. Tearle & co., 1957. 96 p. illus., ports., diagrs. 27½cm. (621.0968) Exchange Engineering Works, Ltd. The Dardelet self-locking thread: [screws]. Wadeville, Tvl., the Exchange engineering works, (1957). [15] p. diagrs. 17½cm.

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(621.882)Federation of Master Printers of South Africa. Reply to report No.353 of the Board of trade and industries on the printing industry. (Jobg., the Federation, 1956). 68 p. 24cm. (655,168) Fuel Research Institute of South Africa. South Africa's coal preparation pilot plant . . . (Pretoria), the Institute, (1957). 16 p. illus., ports., diagrs. 25½ x 26½cm. (662.6) Plumstead, Edna P. Coal in Southern Africa. Jobg., Witwatersrand university press, 1957. [ii], 24 p. illus., map, diagrs. 28cm. (553.2)Public Accountants' and Auditors' Board.

Manual of information for the guidance of registered accountants and auditors, revised to 31st March, 1957. (Jobg., the Board, 1957). [iii], 94 + [iii], 95 p. 21cm. (657) Afrikaans & English. Interleaved blank pages. South African Council for Scientific & Industrial Research. Liaison division. C.S.I.R. visitor's guide. (Pretoria, Publications unit of C.S.I.R.), 1957. [iii], 5-24 + [iii], 5-24 p. maps(col.). 20cm. (607) Afrikaans & English.

— National institute for road research.

Report on visit to Europe and North
America in 1956, by P. J. Rigden; part 2.
Road building & road research. Pretoria,
S.A. C.S.I.R., 1957. [iii], 64 p. diagrs.
32½cm.

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#### DOMESTIC SCIENCE/HUISVLYT

Cadbury-Fry Pty. Ltd. firm. Cadbury's chocolate cookery . . . [P.E., the Firm.

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Union of South Africa. Livestock & meat industries control board. Beef for the wise . . . Pretoria, the Board, [1957]. [ii], 14 + [ii], 14 p. illus. 21cm. (641.3)Afrikaans & English. Loose sheet on 'Grade marks'; and coloured poster.

- Choice meat dishes: a menu and recipe diary for the housewife. (Pretoria, the Board), [1957]. [128] p. illus. 10 x 7cm. (641.5)

Afrikaans & English.

Van Loggerenberg, J. Daardie swierige hoed: maak dit self! Jobg., APB, 1957. [v], 7-127 p. illus., diagrs. 22/6. Your New Home: a digest for the homemaker. C.T., K.C. publications, A.A. house, Queen Victoria street, [1957]. 48 p. illus., diagrs. 21cm. (645)

FINE ARTS, PHILATELY & RECREA-TION

### SKONE KUNSTE, POSSEËLVERSAME-LING EN ONTSPANNING

Alphen, Willem Daniel de Vignon van. Knysna forest scenery . . . C.T., Balkema, 1957. [iii], 5-15 p. illus., 21 pls. 24 x 30cm. Baines, Thomas. Thomas Baines: his art in

Rhodesia . . . Salisbury, Central African archives, 1956. [ii], 7[9] p. 6 pls.(col.). (759.9)Limited ed. of 500 copies. Loose in portfolio. Bentley, Maxwell. Soil-less gardening for flats and homes. Jobg., Bendon books, (1957). [vi], 7-140 p. illus., pls.(col.), tables. 24cm. 21/-. De Villiers, Dirk. Piano syncopation; a

complete course for beginners. (Brakpan, Dirk de Villiers school of piano syncopation), [1957]. [i], 27 + [i], 27 p. diagrs. 29cm. 63/-(785.65)

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Ellis, Robert photographer. Cradle parade. C.T., Timmins, (1957). [46] p. illus. 21cm. 16/-.

Portraits of babies.

Holm, Erik. Südafrikas Urkunst . . . (Pretoria, der "Eiche", 1957). 20p. illus., map. 241cm. Rosenthal, Eric. The Cape of Good Hope triangular stamp and its story . . . C.T., Balkema, 1957. [v], 7-48 p. illus.(col.), pls., tables, 20cm, 12/6. (383.22)Tops, A. W. Weerbaar sonder wapen . . . Kpstad., Maskew Miller, [1957]. [v], 98 p. illus., diagrs. 244cm. 13/6.

#### LITERATURE IN ENGLISH

Campbell, Roy [i.e. Ignatius Roy Dunnachie Campbell]. The collected poems of Roy Campbell; v.II. London, Bodley Head, (1957), xi, 256 p. 21 cm. 21/-. Du Preez, Elizabeth Suzanne. Elizabeth sings; the collected writings of Elizabeth du Preez. C.T., Maskew Miller, [1957]. [viii], 83 p. front.(port.), 21cm, 7/6, (828) Kearns, Sylvia. A casket of pearls. Ilfracombe, Stockwell, [1957]. [vii], 9-70 p. (821)18cm. 7/6. Verses. The author lives in Johannesburg.

### **ENGLISH FICTION**

(823)

Bevan, Anthony. Trooper Long. London, Jarrolds, (1957). [xi], 13-256 p. 19 cm. 12/6. Basuto troubles, 1881.

Elisio, Alecia d'Aquino. Bitter journey. [Jobg.], C.N.A., 1957. vi, 173 p. 18½cm. (Dassie book). 2/6.

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— [Sprokies] . . . Jobg., APB, [1957]. 8 v. illus.(some col.). 21cm. 2/9. (839.363) Stopforth, L. Captain of the school. Jobg., Dagbreek book store, 1957. [iii], 5-135 p. 17½cm. 9/6. (823)

Exercises & vocabulary (Eng.-Afr.), pp. 125-135.

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